

FIGURE 1

SNP detection using the Invader™ assay in a biplex format

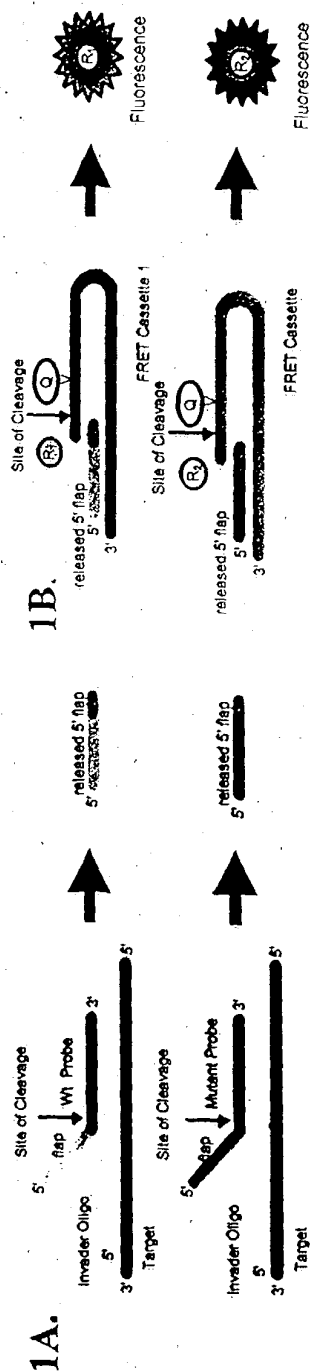


Figure 1. The principle of the Invader™ assay allows for the simultaneous detection of two distinct alleles in the same reaction using an isothermal, single addition format. (A) Allele discrimination takes place by "structure specific" cleavage of the Probe, releasing a 5' flap which corresponds to a given polymorphism. (B) In the second reaction, the released 5' flap mediates signal generation by cleavage of the appropriate FRET cassette.

FIGURE 2

Automated primer selection for multiplex PCR using *Invader™ Creator Primer Designer v 1.3.3*

Multiplex PCR commonly requires extensive optimization to avoid biased amplification of select amplicons and the amplification of spurious products resulting from the formation of primer-dimers. In order to avoid these problems, we have designed *Invader™ Creator Primer Designer v1.3.3* software for the automated selection of multiplex primers. Beginning with a set of user defined sequences and corresponding SNP locations, *Invader™ Creator Primer Designer* defines an "Invader™ footprint" (the minimal amplicon required for *Invader™* detection) for each sequence. Primers are designed outward from the "Invader™ footprint" and evaluated against several criteria, including the potential for primer-dimer formation with previously designed primers in the current multiplexing set. *Invader™ Creator Primer Designer* continues through multiple iterations of the same set of sequences until primers against all sequences in the current multiplexing set can be designed.

2A.

29043, FM01, aagttagaagaaccaagactatcttgtcaggggtgtatTTTgagagtggcagactTTTcagtgcct
tccattcatgacacttcttgaatctctggcagaaccagccagccgtgttcacagtgtcaaataagggatgtcttt
gattgcttccaggtgttctcagcaccaccggagggggatgggtgatcagccgaatctttgactcgggctacccatg
ggacatgggtgttcatgacacgctttcagaacatgtttgagaaattccctcccaac [ct] ccaattgtgacttggttga
tggagcgaaagataaacaactggctcaatcatgcaaattacggcttaataaccagaagacaggtaaatataatgtgac
tgccaagggtcttttaggaagaaggagcctctgctgtccagcagcctatacaagccaggcagtagcacagcaacatg
gctgaatgtgtgggaacacttgatacaaatttgcttgataataacagctaactgttcttaagtactcagaaagtga
attatgtatttc

2B.

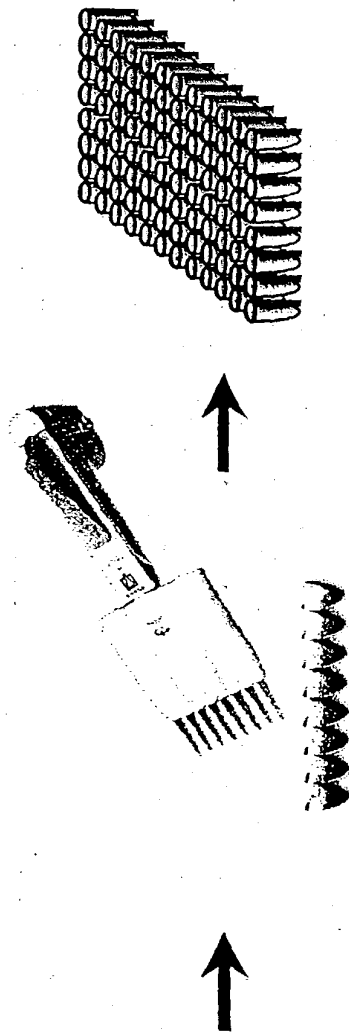
29043, FM01, aagttagaagaaccaagactatcttgtcaggggtgtatTTTgagagtggcagactTTTcagtgcct
tccattcatgacacttcttgaatctctggcagaaccagccagccgtgttcacagtgtcaaataagggatgtcttt
gattgcttccaggtgttctcagcaccaccggagggggatgggtgatcagccgaatctttgactcgggctacccatg
ggacatgggtgttCATGACACGCTTTCAGAACATGTTGAGAAATCCCTCCCAAC [ct] CCAATTGTGACTTGGTTGA
TGGAGCGAAAGATAAACAACCTGGctcaatcatgcaaattacggcttaataaccagaagacaggtaaatataatgtgac
tgccaagggtcttttaggaagaaggagcctctgctgtccagcagcctatacaagccaggcagtagcacagcaacatg
gctgaatgtgtgggaacacttgatacaaatttgcttgataataacagctaactgttcttaagtactcagaaagtga
attatgtatttc

f, cgggctacccatgggaca, 59.38 r, tctggtattaagccgtaatttgcatgattga, 60

Figure 2. Creation of 101 primer sets from sequences available for analysis on the *Invader™ Medically Associated Panel* using *Invader™ Creator Primer Designer v 1.3.3*. (A) Sample input file of a single entry. Information includes TWT SNP#, short name identifier, and sequence with the SNP location indicated in brackets. (B) Sample output file of a the same entry. Information includes the sequence of the "Invader footprint" (capital letters flanking SNP site), forward and reverse primer sequences (bold), and their corresponding Tm's.

FIGURE 3

Basic workflow for highly multiplexed PCR using the Invader™ Medically Associated Panel (MAP)



Multiplex PCR (10 ng / template) Dilute and add directly to Invader™ Medically Associated Panel Incubate at 63°C and read

Analysis of 101-plex PCR using the Invader™ Medically Associated Panel

Using primers designed by the *Invader™ Creator Primer Designer v 1.3.3* software, highly multiplexed PCR was carried out *without* prior testing of individual “primer sets” in uniplex PCR. Of the 101 possible amplicons, 94 (~93%) were detected by the Invader™ assay and made the correct call corresponding to genomic typing of the same sample.

FIGURE 4A

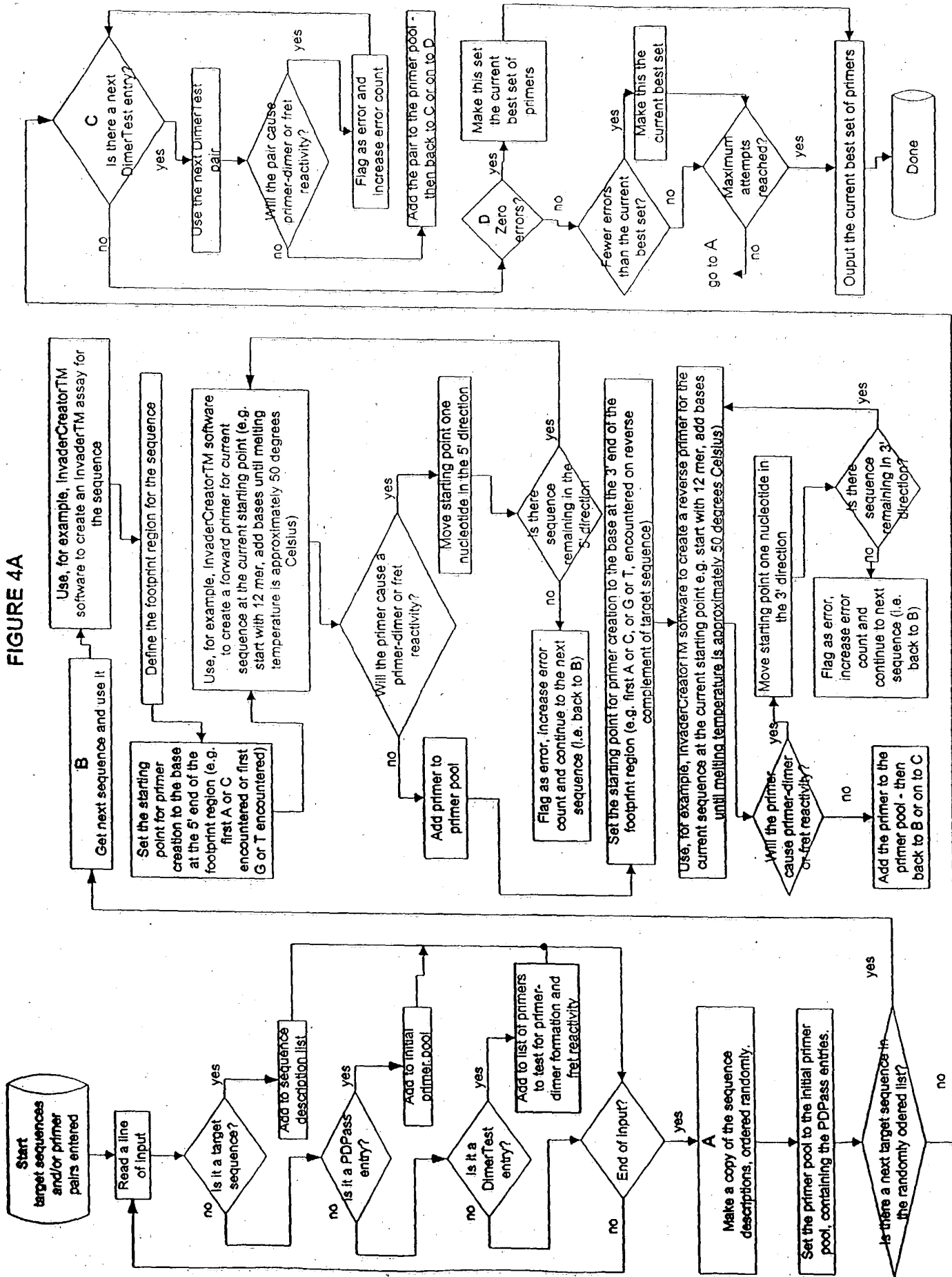


Figure 5A

CYP2D6 PCR amplification:

Primers:

Triplex PCR protocol

Exons 1 & 2 (2036 nt)

2D6L1F1: 5' – CTGGGCTGGGAGCAGCCTC – 3'

2D6L1R1: 5' – CACTCGCTGGCCTGTTTCATGTC – 3'

Exons 3, 4, 5, & 6 (1683 nt)

2D6L2F: 5' – CTGGAATCCGGTGTCTGAAGTGG – 3'

2D6L2R2: 5' – CTCGGCCCCTGCACTGTTTC – 3'

Exons 7, 8, & 9 (1754 nt)

2D6L3F: 5' – GAGGCAAGAAGGAGTGTCTAGGG – 3'

2D6L3R5B: 5' – AGTCCTGTGGTGAGGTGACGAGG – 3'

Monoplex PCR protocol

CYP2D6 nucleotides 506 – 856 (*10 & *21)

forward (1221-09-01): 5' – ggtagtgaggcaggt – 3'

reverse (1221-09-02): 5' – gcttctggtagggag – 3'

CYP2D6 nucleotides 1335 – 1616 (*11 & *17)

forward (1221-09-03): 5' – aaataggactaggacctgt – 3'

reverse (1221-09-04): 5' – ggggtcccacggaaat – 3'

CYP2D6 nucleotides 2092 – 2582 (*4, *6 & *37)

forward (1221-09-05): 5' – catggccacgcg – 3'

reverse (1221-09-06): 5' – ccggcacctctcg – 3'

CYP2D6 nucleotides 2977 – 3146 (*3 & *33)

forward (1221-09-07): 5' – ccgtcctcctgcat – 3'

reverse (1221-09-08): 5' – cactctcaccttctcca – 3'

Figure 5B

CYP2D6 nucleotides 3294 – 3494 (*2 R296C & *7)

forward (1221-09-09): 5' – gttctgtcccagatg –3'

reverse (1221-09-10): 5' – tgcactgtttccaga – 3'

CYP2D6 nucleotides 3589 – 3918 (*25, *26 & *29)

forward (1221-09-11): 5' – ctgacctctccaacat –3'

reverse (1221-09-12): 5' – gggctatcaccaggt – 3'

CYP2D6 nucleotides 4316 – 5226 (*2, *27, *31 & *32)

forward (1221-09-13): 5' – ctgacctctccaacat –3'

reverse (1221-09-15): 5' – gggctatcaccaggt – 3'

Figure 6

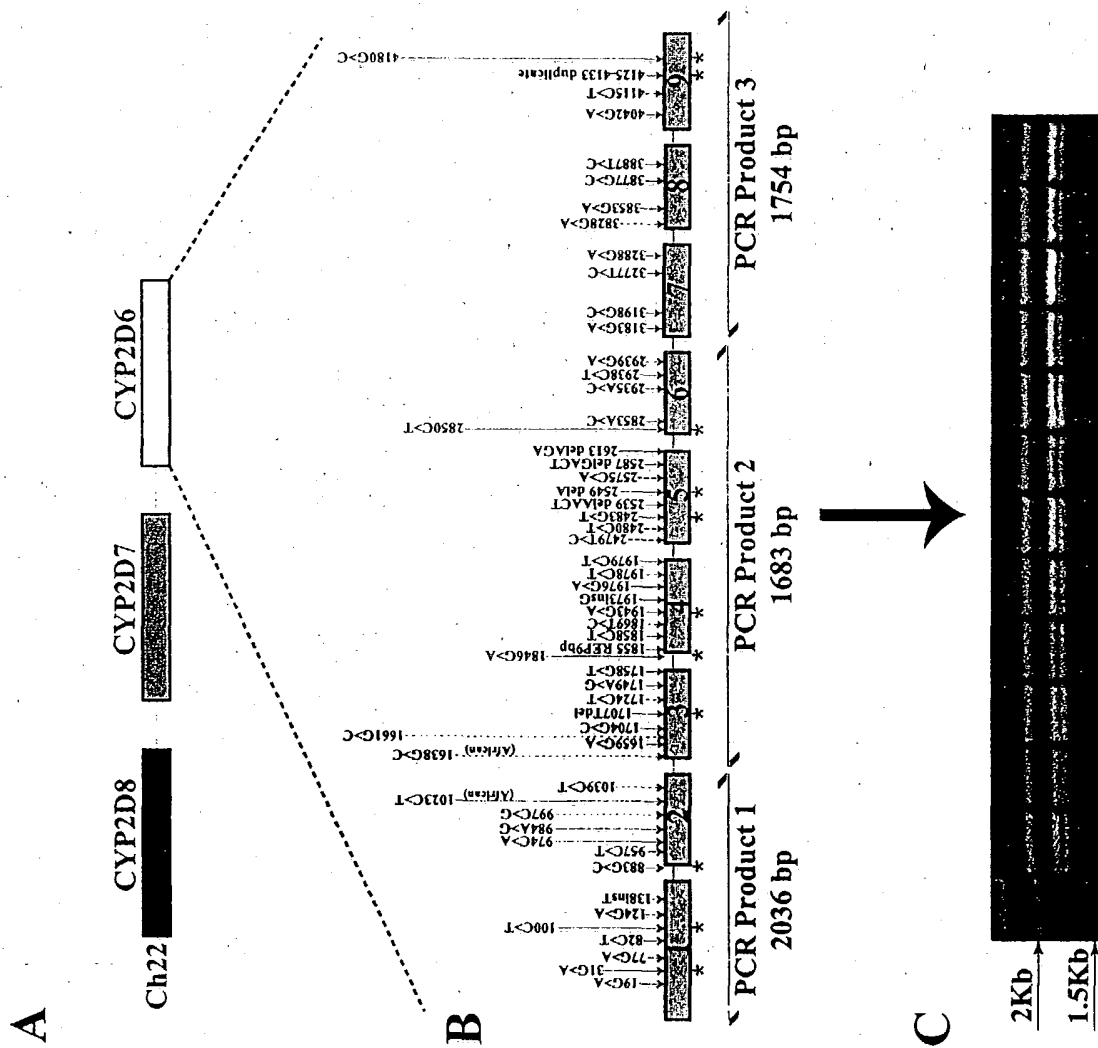


Figure 7A			
Oligo Locus	Oligo Type	Sequence*	
Triplex PCR 1	PCR sense	CTGGGCTGGAGCAGCCTC	SEQ ID NO:264
	PCR anti-sense	CACTCGCTGGCCTGTTTCATGTC	SEQ ID NO:265
Triplex PCR 2	PCR sense	CTGGAATCCGGTGTCGAAGTGG	SEQ ID NO:266
	PCR anti-sense	CTCGGCCCTGCACCTGTTTC	SEQ ID NO:267
Triplex PCR 3	PCR sense	GAGGCAAGAAGGAGTGTCAAGG	SEQ ID NO:268
	PCR anti-sense	AGTCCTGTGGTGAGGTGACGAGG	SEQ ID NO:269
CYP2D6-XN (duplication)	PCR sense	GCCACCATGGTGTCTTTGCTTTC	SEQ ID NO:270
	PCR anti-sense	ACCGGATTCCAGCTGGGAAATG	SEQ ID NO:271
CYP2D6*5 (deletion)	PCR sense	ACCGGGCACCTGTACTCCTCA	SEQ ID NO:272
	PCR anti-sense	GCATGAGCTAAGGCACCCAGAC	SEQ ID NO:273
CYP2D6 Copy Number assay	2D6 Primary Probe	ACGGACGCGGAGTTACAGCACAGGTGC	SEQ ID NO:274
	Actin Primary Probe	CGCGCCGAGGCAGGTAGTCGGTGAGATC	SEQ ID NO:275
	2D6 Invader oligo	CCCGCGCCACCCACACTGAGCC	SEQ ID NO:276
	Actin Invader oligo	AAGAGTAGCCACGCTCGGTGAGGATCTTCATT	SEQ ID NO:277
CYP2D6*10-100 C>T	Invader Oligo	GCAGTGGCAGGGGGCCTGGTGT	SEQ ID NO:278
	Primary Probe 1	ATGACGTGGCAGAGCGTAGCGTGACG	SEQ ID NO:279
	Primary Probe 2	CGCGCCGAGGAGTAGCGTGACGCC	SEQ ID NO:280
	Synthetic Target 1	GCTGGGCTGCACGCTACCCACAGGCCCTGCCACTGCC	SEQ ID NO:281
	Synthetic Target 2	GCTGGGCTGCACGCTACTACCCAGGCCCTGCCACTGCC	SEQ ID NO:282

Figure 7B

CYP2D6*6-1707	Invader Oligo	CAGGGGGCCCTCCTCGGTACCT	SEQ ID NO:283
T>Deletion	Primary Probe 1	CGCGCCGAGGCACTGCTCCAGCGA	SEQ ID NO:284
	Primary Probe 2	ATGAGGTGGCAGACCCCTGCTCCAGCGA	SEQ ID NO:285
	Synthetic Target 1	AGAAATCGCTGGAGCAGTGGTGACCCGAGGAGGCCCGCTGCC	SEQ ID NO:286
	Synthetic Target 2	AGAAATCGCTGGAGCAGGCGGTGACCCGAGGAGGCCCGCTGCC	SEQ ID NO:287
CYP2D6*4-1846	Invader Oligo	CCTTACCCGCACTCTCCACCCCAT	SEQ ID NO:288
G>A	Primary Probe 1	CGCGCCGAGGAGAGCGCCCTTTCCG	SEQ ID NO:289
	Primary Probe 2	ATGACGTGGCAGAGCGACCCCTTTCCG	SEQ ID NO:290
	Synthetic Target 1	GGGGCGAAAGGGGGCTCTTGGGGTGGGAGATGCGGGTAAGGGG	SEQ ID NO:291
	Synthetic Target 2	GGGGCGAAAGGGGGCTCTTGGGGTGGGAGATGCGGGTAAGGGG	SEQ ID NO:292
CYP2D6*3-2549	Invader Oligo	GCTGGGTGGTCCAGGTCATCT	SEQ ID NO:293
A>Deletion	Primary Probe 1	CGCGCCGAGGCTGTGCTCAGTTAGCAG	SEQ ID NO:294
	Primary Probe 2	ATGACGTGGCAGAGCCGTGCTCAGTTAGCAG	SEQ ID NO:295
	Synthetic Target 1	ATGACGTGCTAACTGAGCAGAGATGACCTGGGACCCAGCCAGCCC	SEQ ID NO:296
	Synthetic Target 2	ATGACGTGCTAACTGAGCAGGATGACCTGGGACCCAGCCAGCCC	SEQ ID NO:297
CYP2D6*2-2850	Invader Oligo	GGCAGAGAACAGGTCAGCCACCACTATGCT	SEQ ID NO:298
C>T	Primary Probe 1	ATGACGTGGCAGAGCGGTTCTCATATTGAA	SEQ ID NO:299
	Primary Probe 2	CGCGCCGAGGACAGGTTCTCATATTGAA	SEQ ID NO:300
	Synthetic Target 1	GCAGCTTCAATGATGAGAACCTGCGCATAGTGGTGACCTGTTCTCTGCC	SEQ ID NO:301
	Synthetic Target 2	GCAGCTTCAATGATGAGAACCTGTCATAGTGGTGACCTGTTCTCTGCC	SEQ ID NO:302
CYP2D6*2-4180	Invader Oligo	GCCACCATGGTGTCTTTGCTTCTGCTGAT	SEQ ID NO:303
G>C	Primary Probe 1	CGCGCCGAGGCCCCCATCCCCCTATG	SEQ ID NO:304
	Primary Probe 2	ATGACGTGGCAGAGGCCCATCCCCCTATG	SEQ ID NO:305
	Synthetic Target 1	AGCTCATAGGGGGATGGGGTACCAGGAAAGCAACACCATGGTGGCTG	SEQ ID NO:306
	Synthetic Target 2	AGCTCATAGGGGGATGGGGTACCAGGAAAGCAACACCATGGTGGCTG	SEQ ID NO:307

Figure 7C

CYP2D6*18-4125	Invader Oligo	CCGGGGCTGTCCAGTGGGCAT	SEQ ID NO:308
GTGCCCACT>Duplication	Primary Probe 1	CGCGCCGAGGCAGTGGGCACCGA	SEQ ID NO:309
	Primary Probe 2	ATGACGTGGCAGACCCGAGAGCTGAAGTG	SEQ ID NO:310
	Synthetic Target 1	GCAGCACTTCAGCTTCTCGGTGCCCACTGTGCCCACTGGACAGCCCCGGCC	SEQ ID NO:311
	Synthetic Target 2	GCAGCACTTCAGCTTCTCGGTGCCCACTGGACAGCCCCGGCC	SEQ ID NO:312
CYP2D6*11-883	Invader Oligo	CCCGAAGCGGCGCGCAAT	SEQ ID NO:313
G>C	Primary Probe 1	CGCGCCGAGGCTGCAGAGGGAGGG	SEQ ID NO:314
	Primary Probe 2	ATGACGTGGCAGACCGTGCAGAGGGAGGG	SEQ ID NO:315
	Synthetic Target 1	CTGACCCCTCCCTCTGCAGTTGCGGCGCCGCTTCGGGGA	SEQ ID NO:316
	Synthetic Target 2	CTGACCCCTCCCTCTGCAGTTGCGGCGCCGCTTCGGGGA	SEQ ID NO:317
CYP2D6*35-31	Invader Oligo	GGCTAGAAGCACTGRTGCCCTGGCCT	SEQ ID NO:318
G>A	Primary Probe 1	ATGACGTGGCAGAGCTGATAGTGGCCATCTTC	SEQ ID NO:319
	Primary Probe 2	CGCGCCGAGGATGATAGTGGCCATCTTC	SEQ ID NO:320
	Synthetic Target 1	GCAGGAAGATGGCCCACTATCACGGCCAGGGGCAYCAGTGTCTAGCCCC	SEQ ID NO:321
	Synthetic Target 2	GCAGGAAGATGGCCCACTATCATGGCCAGGGGCAYCAGTGTCTAGCCCC	SEQ ID NO:322
CYP2D6*33-2483	Invader Oligo	AGCCTTTTGGAAAGCGTAGGACCTTGCCAGT	SEQ ID NO:323
G>T	Primary Probe 1	ATGACGTGGCAGACCCAGCGCTGGGATA	SEQ ID NO:324
	Primary Probe 2	CGCGCCGAGGACAGCGCTGGGATAT	SEQ ID NO:325
	Synthetic Target 1	CTGCATATCCAGCGCTGGCTGGCAAGGTCCTACGCTTCCAAAAGGCTTT	SEQ ID NO:326
	Synthetic Target 2	CTGCATATCCAGCGCTGTCTGGCAAGGTCCTACGCTTCCAAAAGGCTTT	SEQ ID NO:327
CYP2D6*37-1943	Invader Oligo	CTGAGCTAGGTCCAGCAGCCTGAGGAAGA	SEQ ID NO:328
G>A	Primary Probe 1	ATGACGTGGCAGACCCAGGGTCTGCTGAC	SEQ ID NO:329
	Primary Probe 2	CGCGCCGAGGTGAGGGTCGTCGTAC	SEQ ID NO:330
	Synthetic Target 1	TCGAGTACGACGACCCCTCCCTCCTCAGGCTGCTGGACCTAGCTCAGG	SEQ ID NO:331
	Synthetic Target 2	TCGAGTACGACGACCCCTCCTCCTCAGGCTGCTGGACCTAGCTCAGG	SEQ ID NO:332
* Underlined sequence represents the Primary Probe Arm or 'Flap'.			

Figure 8

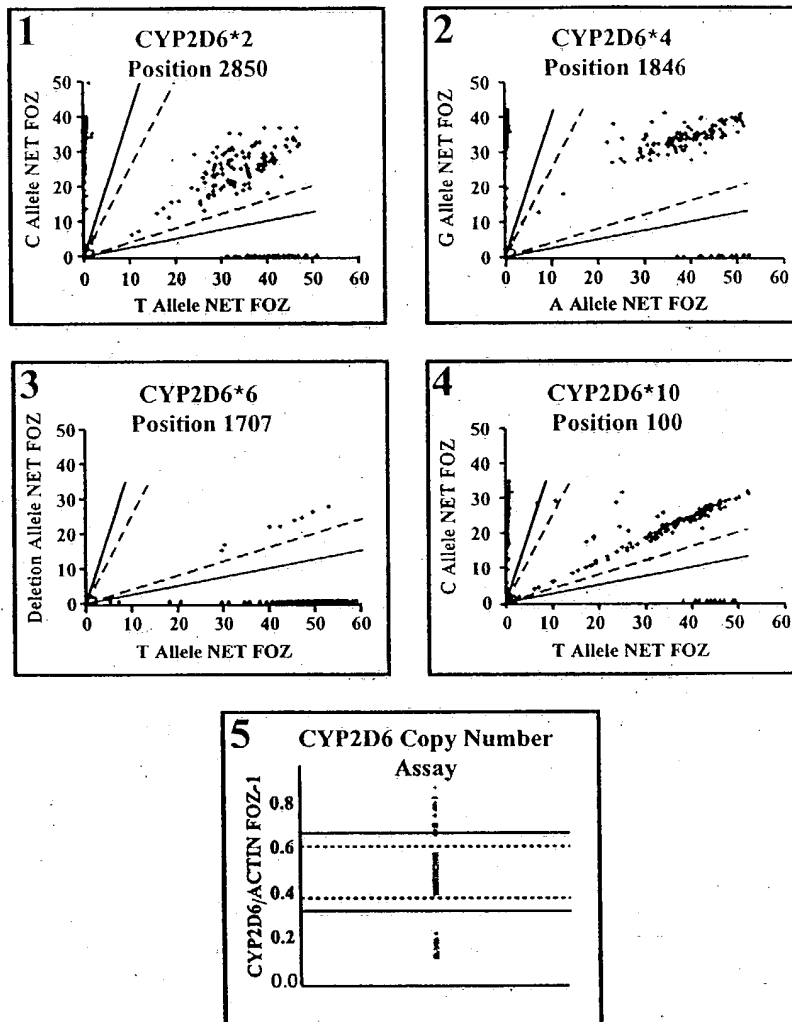


Figure 9

Position	31	100	883	1707	1846	1943	2483	2549	2850	4125-4133	4180
Allele	*35	*10	*11	*6	*4	*37	*33	*3	*2	*18	*2
PCR product	PCR1	PCR1	PCR1	PCR2	PCR2	PCR2	PCR2	PCR2	PCR2	PCR3	PCR3
Polymorphism	G>A	C>T	G>C	T>Del	G>A	G>A	G>T	A>Del	C>T	duplication	G>C
Effect	V11M	P34S	splice defect	frameshift	splice defect	R201H	A237S	frameshift	R296C	468VPT470	S486T
n=	172	171	174	174	173	174	173	172	173	174	173
WT frequency	157	97	174	170	102	174	169	164	89	174	41
HET frequency	14	66	0	4	64	0	4	8	60	0	76
Mut frequency	1	8	0	0	7	0	0	0	24	0	56
Hardy Weinberg	$\chi^2_{1.2}$ (p=0.28)	$\chi^2_{0.6}$ (p=0.44)		$\chi^2_{0.0}$ (p=0.88)	$\chi^2_{0.6}$ (p=0.4)		$\chi^2_{0.0}$ (p=0.88)	$\chi^2_{0.1}$ (p=0.75)	$\chi^2_{6.4}$ (p=0.011)		$\chi^2_{2.3}$ (p=0.13)
Rare allele frequency	4.6	24	0	1.2	22.5	0	1.2	2.3	31.2	0	54.3
EM frequency*	4.6	23.8	0	1.2	22.7		1.2	2.3	31.4	0	54.7
Published Freq	6.70%	18(Asi 16)	0.1	1.8	18(Afr 6.3)	0.1(Afr 0.01)	0.6	1.7	34(Asi 18)	Asi 0.7	53(Asi 65)

EM frequency= Allele frequency as generated by the Expectation Maximisation algorithm implemented in the Arlequin genetic software

Figure 10

Haplotype	Freq.	s.d.	G31	C100	G883	INS1707	G1846	G1943	G2483	INS2549	C2850	DEL4125	G4180
CYP2D6*1	0.401	0.027	G31	C100	G883	INS1707	G1846	G1943	G2483	INS2549	C2850	DEL4125	G4180
CYP2D6*2	0.262	0.024	G31	C100	G883	INS1707	G1846	G1943	G2483	INS2549	T2850	DEL4125	C4180
CYP2D6*4	0.221	0.024	G31	T100	G883	INS1707	A1846	G1943	G2483	INS2549	C2850	DEL4125	C4180
CYP2D6*35	0.047	0.013	A31	C100	G883	INS1707	G1846	G1943	G2483	INS2549	T2850	DEL4125	C4180
CYP2D6*3	0.029	0.012	G31	C100	G883	INS1707	G1846	G1943	G2483	DEL2549	C2850	DEL4125	G4180
CYP2D6*6	0.012	0.007	G31	C100	G883	DEL1707	G1846	G1943	G2483	INS2549	C2850	DEL4125	G4180
CYP2D6*33	0.012	0.007	G31	C100	G883	INS1707	G1846	G1943	T2483	INS2549	C2850	DEL4125	G4180
CYP2D6*10	0.012	0.007	G31	T100	G883	INS1707	G1846	G1943	G2483	INS2549	C2850	DEL4125	C4180
CYP2D6*4k	0.006	0.004	G31	T100	G883	INS1707	A1846	G1943	G2483	INS2549	T2850	DEL4125	C4180

Figure 11

Number of functional Alleles	Compound Haplotype	Number of Subjects
2	*1/*1	31
	*1/*2	26
	*2/*2	15
	*2/*35	8
	*1/*35	3
	*1/*33	3
	*1/*10	2
	*2/*10	1
	*2/*33	1
	*35/*35	1
1	*1/*4	35
	*2/*4	22
	*1/*3	4
	*2/*3	2
	*4/*35	3
	*1/*6	2
	*4/*10	1
	*2/*6	1
0	*4/*4	7
	*3/*4	2
	*4/*6	1

Figure 12A

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 1	CYP2D6*10(188C>T) AS	Invader oligo	CCAAACGCTGGGCTGCACGCTACA
SEQ ID NO: 2	CYP2D6*10(188C>T) AS	Probe	ACGGACGCGGAGCCACCAGGCCCCV
SEQ ID NO: 3	CYP2D6*10(188C>T) AS	Probe	CGGCGGAGGTACACAGGCCCCV
SEQ ID NO: 4	CYP2D6*10(188C>T) AS	Target	GCAGGGGCGCTGGTGGGTAGCGTGCAGCCACGCGTTGGCG
SEQ ID NO: 5	CYP2D6*10(188C>T) AS	Target	GCAGGGGCGCTGGTGGGTAGCGTGCAGCCACGCGTTGGCG
SEQ ID NO: 6	CYP2D6*14(1846G>A) AS	Invader oligo	GCCGCTTCGCCAACCACTCCT
SEQ ID NO: 7	CYP2D6*14(1846G>A) AS	Probe	ACGGACGCGGAGGGTGGGTGATGGV
SEQ ID NO: 8	CYP2D6*14(1846G>A) AS	Probe	CGGCGGAGGAGTGGGTGATGGCV
SEQ ID NO: 9	CYP2D6*14(1846G>A) AS	Target	TTCTGCCCATCACCCACCGGAGTGGTTGGCGAAGCGCGGCAC
SEQ ID NO: 10	CYP2D6*14(1846G>A) AS	Target	TTCTGCCCATCACCCACCGGAGTGGTTGGCGAAGCGCGGCAC
SEQ ID NO: 11	CYP2D6*18(insertion) S	Invader oligo	CCGGGCTGTCCAGTGGGCAT
SEQ ID NO: 12	CYP2D6*18(insertion) S	Probe	CGGCGGAGGCAGTGGGCACCCGAV
SEQ ID NO: 13	CYP2D6*18(insertion) S	Probe	ACGGACGCGGAGCCGAGAGCTGAAGTGV
SEQ ID NO: 14	CYP2D6*18(insertion) S	Target	GCAGCACTTCAGCTTCCTCGGTGCCACTGTGCCCACTGGACAGCCCCGGGCC
SEQ ID NO: 15	CYP2D6*18(insertion) S	Target	GCAGCACTTCAGCTTCCTCGGTGCCACTGGACAGCCCCGGGCC
SEQ ID NO: 16	CYP2D6*18(insertion) AS	Invader oligo	CTCCCTGCTGCAGCACTTCAGCTTCCT
SEQ ID NO: 17	CYP2D6*18(insertion) AS	Probe	CGGCGGAGGGGTGCCCACTGTGV
SEQ ID NO: 18	CYP2D6*18(insertion) AS	Probe	ACGGACGCGGAGGGTGGCCCACTGGAV
SEQ ID NO: 19	CYP2D6*18(insertion) AS	Target	GCTGTCCAGTGGGCACAGTGGGCACCCGAGAACGCTGAAGTGTGCAGCAGGGAGGT
SEQ ID NO: 20	CYP2D6*18(insertion) AS	Target	GCTGTCCAGTGGGCACCCGAGAACGCTGAAGTGTGCAGCAGGGAGGT
SEQ ID NO: 21	CYP2D6*2(2938C>T) AS	Invader oligo	GAACCTTGAGAGCAGCTTCAATGATGAGAACCTGA
SEQ ID NO: 22	CYP2D6*2(2938C>T) AS	Probe	ACGGACGCGGAGCCGATAGTGGTGGCV
SEQ ID NO: 23	CYP2D6*2(2938C>T) AS	Probe	CGGCGGAGGTGCATAGTGGTGGCTV
SEQ ID NO: 24	CYP2D6*2(2938C>T) AS	Target	GGTCAGCCACCACTATGGCGAGGTTCTCATCTGAAGCTGCTCAGGGTTCCC
SEQ ID NO: 25	CYP2D6*2(2938C>T) AS	Target	GGTCAGCCACCACTATGCACAGGTTCTCATCTGAAGCTGCTCAGGGTTCCC
SEQ ID NO: 26	CYP2D6*2(4268G>C) AS	Invader oligo	CCACCATGGTCTTTTCTTCTTCTGTGAT
SEQ ID NO: 27	CYP2D6*2(4268G>C) AS	Probe	ACGGACGCGGAGGCCCATCCCCCTATV

Figure 12B

	SNP Name	Oligo Type	Sequence Oligo
SEQ ID NO: 28	CYP2D6*2(4268G>C) AS	Probe	CGGCGGAGGCCCCATCCCCCTATV
SEQ ID NO: 29	CYP2D6*2(4268G>C) AS	Target	GCTCATAGGGGATGGGCTCACCAGGAAAGCAAAAGACACCATGGTGGCT
SEQ ID NO: 30	CYP2D6*2(4268G>C) AS	Target	GCTCATAGGGGATGGGCTCACCAGGAAAGCAAAAGACACCATGGTGGCT
SEQ ID NO: 31	CYP2D6*3(2637A>del) AS	Invader oligo	CCAGCTGGATGAGCTGCTAACTGAGCAT
SEQ ID NO: 32	CYP2D6*3(2637A>del) AS	Probe	CGGCGGAGGCGAGGATGACCTGGGAV
SEQ ID NO: 33	CYP2D6*3(2637A>del) AS	Probe	ACGACGCGGAGCGGATGACCTGGGAV
SEQ ID NO: 34	CYP2D6*3(2637A>del) AS	Target	CTGGGTCGCCAGGTCATCCTGTGCTCAGTTAGCAGCTCATCCAGCTGGGTC
SEQ ID NO: 35	CYP2D6*3(2637A>del) AS	Target	CTGGGTCGCCAGGTCATCCTGTGCTCAGTTAGCAGCTCATCCAGCTGGGTC
SEQ ID NO: 36	CYP2D6*4(1934G>A) AS	Invader oligo	CTTACCCGATCTCCACCCCAT
SEQ ID NO: 37	CYP2D6*4(1934G>A) AS	Probe	ACGACGCGGAGGAGGACGCCCTTTCV
SEQ ID NO: 38	CYP2D6*4(1934G>A) AS	Probe	CGGCGGAGGAGACGCCCTTTCV
SEQ ID NO: 39	CYP2D6*4(1934G>A) AS	Target	GGGGCGAAAGGGGCGTCTCTGGGGTGGGAGATGCGGGTAAGGG
SEQ ID NO: 40	CYP2D6*4(1934G>A) AS	Target	GGGGCGAAAGGGGCGTCTCTGGGGTGGGAGATGCGGGTAAGGG
SEQ ID NO: 41	CYP2D6*6(1795T>del) AS	Invader oligo	CCTGGGCAAGAACTCGCTGGAGCAT
SEQ ID NO: 42	CYP2D6*6(1795T>del) AS	Probe	CGGCGGAGGGTGGGTGACCGAGGV
SEQ ID NO: 43	CYP2D6*6(1795T>del) AS	Probe	ACGACGCGGAGGAGGGGTGACCGAGGV
SEQ ID NO: 44	CYP2D6*6(1795T>del) AS	Target	GGCTCTCTCGGTCAACCCACTGCTCCAGCGACTTCTTGCCAGGCC
SEQ ID NO: 45	CYP2D6*6(1795T>del) AS	Target	GGCTCTCTCGGTCAACCCACTGCTCCAGCGACTTCTTGCCAGGCC
SEQ ID NO: 46	CYP2D6*7(3023A>C) AS	Invader oligo	CCTGGGGCTCTCTGCTCATGATCCTACT
SEQ ID NO: 47	CYP2D6*7(3023A>C) AS	Probe	CGGCGGAGGATCCGGATGTGCAGV
SEQ ID NO: 48	CYP2D6*7(3023A>C) AS	Probe	ACGACGCGGAGGCTCCGGATGTGCAGV
SEQ ID NO: 49	CYP2D6*7(3023A>C) AS	Target	CACGCTGCACATCCGGATGTAGGATCATGAGCAGGAGGCCAGGCC
SEQ ID NO: 50	CYP2D6*7(3023A>C) AS	Target	CACGCTGCACATCCGGAGGTAGGATCATGAGCAGGAGGCCAGGCC
SEQ ID NO: 51	CYP2D6*8(1846G>T) AS	Invader oligo	GCGGCTTCGCCAACCACTCCC
SEQ ID NO: 52	CYP2D6*8(1846G>T) AS	Probe	ACGACGCGGAGGTTGGGTGATGGGV
SEQ ID NO: 53	CYP2D6*8(1846G>T) AS	Probe	CGGCGGAGGTTGGGTGATGGGV
SEQ ID NO: 54	CYP2D6*8(1846G>T) AS	Target	TTCTGCCCATCACCCACCGAGTGGTTGGCGAAGCGGGCAC

Figure 12C

SEQ ID NO.	SNP Name	Oligo Type	Sequence @lgo
55	CYP2D6*8 (1846G>T) AS	Target	TTCGCCCATCACCCACAGGAGTGGCGAAGCGCGGCAC
56	2D6*2	Invader oligo	GCCACCATGGTGCTTTGCTTCTTCTGGTGAT
57	2D6*2	Probe	CGGCGGAGGCCCATCCCTATGV
58	2D6*2	Probe	ACGAGCGGGAGGCCCATCCCTATV
59	2D6*2	Target	AGTCATAGGGGATGGGTACACAGGAAAGCAAAACACACCATGGTGGCTG
60	2D6*2	Target	AGTCATAGGGGATGGGTACACAGGAAAGCAAAACACACCATGGTGGCTG
61	CYP2D6*3 frameshift	Invader oligo	GCTGGCTGGTCCAGGTCTCT
62	CYP2D6*3 frameshift	Probe	CGGCGGAGGCTGTGCTCAGTTAGCAGV
63	CYP2D6*3 frameshift	Probe	ACGAGCGGGAGCGTGTCTCAGTTAGCAGV
64	CYP2D6*3 frameshift	Target	ATGAGCTGCTAACTAGCACAGGATGACCTGGACCCAGCCAGCCCC
65	CYP2D6*3 frameshift	Target	ATGAGCTGCTAACTAGCACAGGATGACCTGGACCCAGCCAGCCCC
66	2D6*4	Invader oligo	CCTTACCCGCATCTCCACCCCAT
67	2D6*4	Probe	CGGCGGAGGAGACGCCCTTTTCV
68	2D6*4	Probe	ACGAGCGGGAGGGACGCCCTTTTCV
69	2D6*4	Target	GGGCGAAAGGGGGCTTGGGGTGGGAGATGCGGGTAAGGGG
70	2D6*4	Target	GGGCGAAAGGGGGCTTGGGGTGGGAGATGCGGGTAAGGGG
71	2D6*6	Invader oligo	CAGCGGCTCTCGGTCACT
72	2D6*6	Probe	CGGCGGAGGCACTGCTCCAGGAV
73	2D6*6	Probe	ACGAGCGGGAGGCTGCTCCAGGAV
74	2D6*6	Target	AGAAGTCGCTGGAGCAGTGGGTGACCGAGGCGCGCTGCC
75	2D6*6	Target	AGAAGTCGCTGGAGCAGGCGGTGACCGAGGCGCGCTGCC
76	2D6*7	Invader oligo	GGGCTCACGCTGCACATCCGGAC
77	2D6*7	Probe	CGCGCGAGGTGTAGGATCATGAGCAGV
78	2D6*7	Probe	ACGAGCGGGAGGGTAGGATCATGAGCAGV
79	2D6*7	Target	GCCTCTGCTCATGATCCTACATCCGGATGTGCAGCGTGAGCCCAT
80	2D6*7	Target	GCCTCTGCTCATGATCCTACATCCGGATGTGCAGCGTGAGCCCAT
81	CYP2D6 P34S	Invader oligo	GCAGTGGCAGGGGGCTGGTGT

Figure 12D

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 82	CYP2D6_P34S	Probe	ACGGACCGCGGAGGGTAGCGTGACGCV
SEQ ID NO: 83	CYP2D6_P34S	Probe	CGCGCCGAGGAGTAGCGTGACGCCV
SEQ ID NO: 84	CYP2D6_P34S	Target	GCTGGGCTGCACGCTACCCACCAAGGCCCTGCGACTGCCC
SEQ ID NO: 85	CYP2D6_P34S	Target	GCTGGGCTGCACGCTACTCACCAGGCCCTGCGACTGCCC
SEQ ID NO: 86	CYP2D6*11 splice	Invader oligo	AGGCCCTGACCCCTCCCTCTGCAT
SEQ ID NO: 87	CYP2D6*11 splice	Probe	CGCGCCGAGGGTTGCGGGCGCCV
SEQ ID NO: 88	CYP2D6*11 splice	Probe	ACGGACCGCGGAGCTTGCGGGCGCCV
SEQ ID NO: 89	CYP2D6*11 splice	Target	AAGCGGGCGCGCACTGCAGAGGGAGGTCAGGGCCCTCT
SEQ ID NO: 90	CYP2D6*11 splice	Target	AAGCGGGCGCGCAAGTGCAGAGGGAGGTCAGGGCCCTCT
SEQ ID NO: 91	CYP2D6_H94R	Invader oligo	CGCGAGGCGCTGGTGACCCCT
SEQ ID NO: 92	CYP2D6_H94R	Probe	ACGGACCGCGGAGACGGCGAGGACACV
SEQ ID NO: 93	CYP2D6_H94R	Probe	CGCGCCGAGGGCGCGCGAGGACAV
SEQ ID NO: 94	CYP2D6_H94R	Target	GGCGGTGCTCTGCGCGGTGGGTACACAGCGCCTCGCGCA
SEQ ID NO: 95	CYP2D6_H94R	Target	GGCGGTGCTCTGCGCGGGTACACAGCGCCTCGCGCA
SEQ ID NO: 96	CYP2D6_1039[CT]	Invader oligo	TGTGCCATCACCCAGATCCTGGGTTTA
SEQ ID NO: 97	CYP2D6_1039[CT]	Probe	ACGGACCGCGGAGCGGGCGCGCTV
SEQ ID NO: 98	CYP2D6_1039[CT]	Probe	CGCGCCGAGGTGGGCGCGCTV
SEQ ID NO: 99	CYP2D6_1039[CT]	Target	TGGGAACGGGCCCCGAAACCCAGGATCTGGGTGATGGGCACAGG
SEQ ID NO: 100	CYP2D6_1039[CT]	Target	TGGGAACGGGCCCCGAAACCCAGGATCTGGGTGATGGGCACAGG
SEQ ID NO: 101	CYP2D6_1661[GT]	Invader oligo	GCGAGCAGAGCGCTTCTCCGTT
SEQ ID NO: 102	CYP2D6_1661[GT]	Probe	CGCGCCGAGGGTCCACCTTGCGCV
SEQ ID NO: 103	CYP2D6_1661[GT]	Probe	ACGGACCGCGGAGCTCCACCTTGCGCV
SEQ ID NO: 104	CYP2D6_1661[GT]	Target	AGTTGCGCAAGGTGGACACGGAGAGCGCCTCTGCTCGCGC
SEQ ID NO: 105	CYP2D6_1661[GT]	Target	AGTTGCGCAAGGTGGAGACGGAGAGCGCCTCTGCTCGCGC
SEQ ID NO: 106	CYP2D6*8_G169X	Invader oligo	TGCCGCTTCGCCCAACCACTCCC
SEQ ID NO: 107	CYP2D6*8_G169X	Probe	ACGGACCGCGGAGGGTGGGTGATGGGCV
SEQ ID NO: 108	CYP2D6*8_G169X	Probe	CGCGCCGAGGTGGGTGATGGGCV

Figure 12E

SEQ ID NO:	SNP Name	Oligo Type	Sequence Oligo
109	CYP2D6*8_G169X	Target	TTCTGCCCATCACCCACGGAGTGGTGGCGAAGGGGGCACA
110	CYP2D6*8_G169X	Target	TTCTGCCCATCACCCACAGAGTGGTGGCGAAGGGGGCACA
111	CYP2D6_G212E	Invader oligo	CAGGCTGCTGGACCTAGCTCAGGAGGT
112	CYP2D6_G212E	Probe	CGCGCCGAGGGGACTGAAGGAGGAGTGGV
113	CYP2D6_G212E	Probe	ACGGACGGGAGAACTGAAGGAGGAGTGGV
114	CYP2D6_G212E	Target	AGCCGACTCCTCCTTCACTCAGTCCCTCTGAGCTAGGTCCAGCAGCCTGAG
115	CYP2D6_G212E	Target	AGCCGACTCCTCCTTCACTCAGTCCCTCTGAGCTAGGTCCAGCAGCCTGAG
116	CYP2D6*9_K281del	Invader oligo	CCTGACTGAGGCTTCTGGCAGAGATGT
117	CYP2D6*9_K281del	Probe	CGCGCCGAGGGAGAAAGTGAAGTGGCV
118	CYP2D6*9_K281del	Probe	ACGGACGGGAGGAGGTGAAGTGGCV
119	CYP2D6*9_K281del	Target	CGTGGCAGCCACTCTCACCTTCTCCATCTCTGCCAGGAAGGCCTCAGTCAGGTC
120	CYP2D6*9_K281del	Target	CGTGGCAGCCACTCTCACCTTCTCCATCTCTGCCAGGAAGGCCTCAGTCAGGTC
121	CYP2D6_R296C	Invader oligo	GAACCTGAGAGCAGCTTCAATGATGAGAACCTGA
122	CYP2D6_R296C	Probe	CGCGCCGAGGGCGCATAGTGGTGGCV
123	CYP2D6_R296C	Probe	ACGGACGGGAGTGCCATAGTGGTGGCV
124	CYP2D6_R296C	Target	GGTACGCCACCACATATGCGCAGGTCTCATCATTTGAAGTCTCAGGGTTCCC
125	CYP2D6_R296C	Target	GGTACGCCACCACATATGCGCAGGTCTCATCATTTGAAGTCTCAGGGTTCCC
126	CYP2D6_L421P	Invader oligo	CTTCGGCTTCCACCCCGAACACTTCCA
127	CYP2D6_L421P	Probe	ACGGACGGGAGTGGATGCCAGGGV
128	CYP2D6_L421P	Probe	CGCGCCGAGGGCGGATGCCAGGGV
129	CYP2D6_L421P	Target	GTGGCCCTGGGCATCCAGGAAGTTCGGGGTGGAAAGCGAAGGG
130	CYP2D6_L421P	Target	GTGGCCCTGGGCATCCGGGAAGTTCGGGGTGGAAAGCGAAGGG
131	CYP2D6_1661[G]	Invader oligo	AGCCCAAGTTGCCAAGGTGGAT
132	CYP2D6_1661[G]	Probe	CGCGCCGAGGCACGGAGAAAGCGCV
133	CYP2D6_1661[G]	Probe	ACGGACGGGAGGACGGAGAAAGCGCV
134	CYP2D6_1661[G]	Target	AGAGGGCTTCTCCGTGTCCACCTTGGCGCAACTTGGGCCTGG
135	CYP2D6_1661[G]	Target	AGAGGGCTTCTCCGTGTCCACCTTGGCGCAACTTGGGCCTGG

Figure 12F

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 136	CYP2D6*11 splice S	Invader oligo	CCCGAAGCGGCGCGCGCAAT
SEQ ID NO: 137	CYP2D6*11 splice S	Probe	CGCGCGAGGCTGCAGAGGGAGGGV
SEQ ID NO: 138	CYP2D6*11 splice S	Probe	ACGGACGCGGAGGTGCAGAGGGAGGGV
SEQ ID NO: 139	CYP2D6*11 splice S	Target	CTGACCCCTCCCTCTGCAGTTGCGGCGCGCTTCGGGGA
SEQ ID NO: 140	CYP2D6*11 splice S	Target	CTGACCCCTCCCTCTGCAGTTGCGGCGCGCTTCGGGGA
SEQ ID NO: 141	CYP2D6 H94R S	Invader oligo	GGTCGCGGTGTCCTCGCCGA
SEQ ID NO: 142	CYP2D6 H94R S	Probe	ACGGACGCGGAGTGGGTACCCAGCGV
SEQ ID NO: 143	CYP2D6 H94R S	Probe	CGCGCGAGGCGGGTCAACAGCGV
SEQ ID NO: 144	CYP2D6 H94R S	Target	GAGGCGCTGGTGACCCACGCGGAGGACACCCGCGGACCCG
SEQ ID NO: 145	CYP2D6 H94R S	Target	GAGGCGCTGGTGACCCGCGGCGGAGGACACCCGCGGACCCG
SEQ ID NO: 146	CYP2D6 1039[CT] S	Invader oligo	CTTGCCCTTGGGAACGCGGCCCT
SEQ ID NO: 147	CYP2D6 1039[CT] S	Probe	CGCGCGAGGGAACCCAGGATCTGGV
SEQ ID NO: 148	CYP2D6 1039[CT] S	Probe	ACGGACGCGGAGAAACCCAGGATCTGGV
SEQ ID NO: 149	CYP2D6 1039[CT] S	Target	TCACCCAGATCCTGGGTTTCGGGCGCGTTCCCAAGGCAAGCA
SEQ ID NO: 150	CYP2D6 1039[CT] S	Target	TCACCCAGATCCTGGGTTTCGGGCGCGTTCCCAAGGCAAGCA
SEQ ID NO: 151	CYP2D6*8 G169X S	Invader oligo	CTTTGTGCCCTCTGCCCATCACCCACT
SEQ ID NO: 152	CYP2D6*8 G169X S	Probe	CGCGCGAGGCGGAGTGTTGGCV
SEQ ID NO: 153	CYP2D6*8 G169X S	Probe	ACGGACGCGGAGAGGAGTGTTGGCGV
SEQ ID NO: 154	CYP2D6*8 G169X S	Target	CCTTCGCCAACCACTCCGTTGGTGATGGCAGAGGGCACAAGCG
SEQ ID NO: 155	CYP2D6*8 G169X S	Target	CCTTCGCCAACCACTCCGTTGGTGATGGCAGAGGGCACAAGCG
SEQ ID NO: 156	CYP2D6 G212E S	Invader oligo	CGCAGAAAGCCGACTCCTCTTCAGTA
SEQ ID NO: 157	CYP2D6 G212E S	Probe	ACGGACGCGGAGCCCTCCTGAGCTAGGV
SEQ ID NO: 158	CYP2D6 G212E S	Probe	CGCGCGAGGTCCTCCTGAGCTAGGV
SEQ ID NO: 159	CYP2D6 G212E S	Target	CTGACCTAGCTCAGGAGGAGCTGAAGAGGAGTGGGCTTTCTGCGCG
SEQ ID NO: 160	CYP2D6 G212E S	Target	CTGACCTAGCTCAGGAGGAGCTGAAGAGGAGTGGGCTTTCTGCGCG
SEQ ID NO: 161	CYP2D6*9 K281del S	Invader oligo	CCACCGTGGCAGCCACTCTCACCC
SEQ ID NO: 162	CYP2D6*9 K281del S	Probe	CGCGCGAGGTTCTCCATCTCTGCCAV

Figure 12G

	SNPName	OligoType	Sequence@lgo
SEQ ID NO: 163	CYP2D6*9 K281del S	Probe	ACGGACGGGGAGTCCATCTCTGCCAGG
SEQ ID NO: 164	CYP2D6*9 K281del S	Target	GCCTTCCTGGCAGAGATGGAGAAGGTGAGAGTGGCTGCCACGGTGGGG
SEQ ID NO: 165	CYP2D6*9 K281del S	Target	GCCTTCCTGGCAGAGATGGAGGTGAGAGTGGCTGCCACGGTGGGG
SEQ ID NO: 166	CYP2D6 R296C S	Invader oligo	GGCAGAGAACAAGTCAAGTCCAGCCACCACTATGCT
SEQ ID NO: 167	CYP2D6 R296C S	Probe	CGCGCCGAGGGCAGGTTCTCATCATTTGAV
SEQ ID NO: 168	CYP2D6 R296C S	Probe	ACGGACGGGGAGACAGGTTCTCATCATTTGAAAGV
SEQ ID NO: 169	CYP2D6 R296C S	Target	GCAGCTTCAATGATGAGAACCTGCCCATAGTGGTGGCTGACCTGTTCTCTGCCGG
SEQ ID NO: 170	CYP2D6 R296C S	Target	GCAGCTTCAATGATGAGAACCTGTGCATAGTGGTGGCTGACCTGTTCTCTGCCGG
SEQ ID NO: 171	CYP2D6 L421P S	Invader oligo	GCCTCACAAAGTGGCCCTGGGCATCCT
SEQ ID NO: 172	CYP2D6 L421P S	Probe	CGCGCCGAGGAGGAAGTGTTCGGGGV
SEQ ID NO: 173	CYP2D6 L421P S	Probe	ACGGACGGGGAGGGGAAGTGTTCGGGGV
SEQ ID NO: 174	CYP2D6 L421P S	Target	TCCACCCCGAACACATTCCTGGATGCCAGGGCCACITTTGTGAAGCCG
SEQ ID NO: 175	CYP2D6 L421P S	Target	TCCACCCCGAACACATTCCTGGATGCCAGGGCCACITTTGTGAAGCCG
SEQ ID NO: 176	CYP2D6 1661[GC] S	Invader oligo	AGGCCCAAGTTGCGCAAGGTGGAT
SEQ ID NO: 177	CYP2D6 1661[GC] S	Probe	ACGGACGGGGAGCAYGGAGAAGCGCCTV
SEQ ID NO: 178	CYP2D6 1661[GC] S	Probe	CGCGCCGAGGGAYGGAGAAGCGCCTV
SEQ ID NO: 179	CYP2D6 1661[GC] S	Target	GCAGAGGCGCTTCTCCRTGTCCACCTTGGCAACITTTGGGCTGG
SEQ ID NO: 180	CYP2D6 1661[GC] S	Target	GCAGAGGCGCTTCTCCRTGTCCACCTTGGCAACITTTGGGCTGG
SEQ ID NO: 181	CYP2D6 1661[GC] AS	Invader oligo	CGCGGAGCAGAGGGGCTTCTCCRTT
SEQ ID NO: 182	CYP2D6 1661[GC] AS	Probe	CGCGCCGAGGGTCCACCTTGGCGV
SEQ ID NO: 183	CYP2D6 1661[GC] AS	Probe	ACGGACGGGGAGCTCCACCTTGGCGV
SEQ ID NO: 184	CYP2D6 1661[GC] AS	Target	AGTTGGCAAGGTGGACAYGGAGAAGCGCCTCTGCTCGCGCCA
SEQ ID NO: 185	CYP2D6 1661[GC] AS	Target	AGTTGGCAAGGTGGACAYGGAGAAGCGCCTCTGCTCGCGCCA
SEQ ID NO: 186	CYP2D6*8 G169X S	Invader oligo	CTTTGTGCCCTTCTGCCCATCACCCACT
SEQ ID NO: 187	CYP2D6*8 G169X S	Probe	ACGGACGGGGAGGAGTGGTGGCGV
SEQ ID NO: 188	CYP2D6*8 G169X S	Probe	CGCGCCGAGGAGGAGTGGTGGCGAV
SEQ ID NO: 189	CYP2D6*8 G169X S	Target	GCCTTGGCCRACCACTCCGGTGGGTGATGGGCAGAAAGGGGCACAAAGCG

Figure 12H

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 190	CYP2D6*8_G169X_S	Target	GCCTTCGCCCRACCACTCCTGTGGGTGATGGGCACAAAGGGGCACAAAGCG
SEQ ID NO: 191	CYP2D6*8_G169XA_S	Invader oligo	CTTGTGCCCTTCTGCCCATCACCCACA
SEQ ID NO: 192	CYP2D6*8_G169XA_S	Probe	CGCGCGGAGGGGAGTGGTYGGCGV
SEQ ID NO: 193	CYP2D6*8_G169XA_S	Probe	ACGGACGGGGAGTGGAGTGGTYGGCGV
SEQ ID NO: 194	CYP2D6*8_G169XA_S	Target	CCTTCGCCCRACCACTCCGGTGGGTGATGGGCAGAAAGGGGCACAAAGCG
SEQ ID NO: 195	CYP2D6*8_G169XA_S	Target	CCTTCGCCCRACCACTCCAGTGGGTGATGGGCAGAAAGGGGCACAAAGCG
SEQ ID NO: 196	CYP2D6*8_G169XA_AS	Invader oligo	GTGCGGCTTCGCCCRACCACTCCT
SEQ ID NO: 197	CYP2D6*8_G169XA_AS	Probe	ACGGACGGGGAGGTTGGGTGATGGCGV
SEQ ID NO: 198	CYP2D6*8_G169XA_AS	Probe	CGCGCGGAGGAGTGGGTGATGGCGV
SEQ ID NO: 199	CYP2D6*8_G169XA_AS	Target	TTCTGCCCATCACCCACCGGAGTGGTYGGCAGAAAGGGGCACAA
SEQ ID NO: 200	CYP2D6*8_G169XA_AS	Target	TTCTGCCCATCACCCACTGGAGTGGTYGGCAGAAAGGGGCACAA
SEQ ID NO: 201	CYP2D6*17_T107I_S	Invader oligo	CGCGGCCRAAACCCAGGATCTGGT
SEQ ID NO: 202	CYP2D6*17_T107I_S	Probe	ACGGACGGGGAGTGGTGGGCACAGGV
SEQ ID NO: 203	CYP2D6*17_T107I_S	Probe	CGCGCGGAGGATGATGGGCACAGGV
SEQ ID NO: 204	CYP2D6*17_T107I_S	Target	GCCGCGCTGTGCCCATCACCCAGATCCTGGGTTTGGGCGCGGT
SEQ ID NO: 205	CYP2D6*17_T107I_S	Target	GCCGCGCTGTGCCCATCATCCAGATCCTGGGTTTGGGCGCGGT
SEQ ID NO: 206	CYP2D6*17_T107I_AS	Invader oligo	CGCGCGCTGTGCCCATCAA
SEQ ID NO: 207	CYP2D6*17_T107I_AS	Probe	CGCGCGGAGGGCCACAGATCCTGGGTTV
SEQ ID NO: 208	CYP2D6*17_T107I_AS	Probe	ACGGACGGGGAGTCCAGATCCTGGGTTTV
SEQ ID NO: 209	CYP2D6*17_T107I_AS	Target	GCCRAAACCCAGGATCTGGGTGATGGGCACAGCGGGCGGT
SEQ ID NO: 210	CYP2D6*17_T107I_AS	Target	GCCRAAACCCAGGATCTGGATGATGGGCACAGCGGGCGGT
SEQ ID NO: 211	CYP2D6_R296C_S	Invader oligo	GAACCTGAGAGCAGCTTCAATGATGAGAACCTGA
SEQ ID NO: 212	CYP2D6_R296C_S	Probe	CGCGCGGAGGGCGMTAGTGGTGCTV
SEQ ID NO: 213	CYP2D6_R296C_S	Probe	ACGGACGGGGAGTGCMTAGTGGTGCTGV
SEQ ID NO: 214	CYP2D6_R296C_S	Target	AGTCAAGCCACCACTAKGGCAGGTCTCATCAATTGAAGCTGCTCAGGGTCCC
SEQ ID NO: 215	CYP2D6_R296C_S	Target	AGTCAAGCCACCACTAKGCACAGGTCTCATCAATTGAAGCTGCTCAGGGTCCC
SEQ ID NO: 216	CYP2D6_R296C_S	Invader oligo	GGCAGAGAACAGGTCAAGCCACCACTAKGCT

Figure 12I

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 217	CYP2D6_R296C_S	Probe	ACGGACCGCGGAGCGCAGGTTCTCATCATTTGAV
SEQ ID NO: 218	CYP2D6_R296C_S	Probe	CGCGCCGAGGACAGGTTCTCATCATTTGAAGV
SEQ ID NO: 219	CYP2D6_R296C_S	Target	GCAGCTTCAATGATGAGAACCTGCGCMTAGTGGTGGCTGACCTGTTCTCTGCGGG
SEQ ID NO: 220	CYP2D6_R296C_S	Target	GCAGCTTCAATGATGAGAACCTGTCMTAGTGGTGGCTGACCTGTTCTCTGCGGG
SEQ ID NO: 221	CYP2D6*2B	Invader oligo	GGCAGAGAACAGGTCAGCCACCACCTAKGCT
SEQ ID NO: 222	CYP2D6*2B	Probe	ACGGACCGCGGAGCGCAGGTTCTCATCATTTGAV
SEQ ID NO: 223	CYP2D6*2B	Probe	CGCGCCGAGGACAGGTTCTCATCATTTGAAGV
SEQ ID NO: 224	CYP2D6*2B	Target	GCAGCTTCAATGATGAGAACCTGCGCMTAGTGGTGGCTGACCTGTTCTCTGCGGG
SEQ ID NO: 225	CYP2D6*2B	Target	GCAGCTTCAATGATGAGAACCTGTCMTAGTGGTGGCTGACCTGTTCTCTGCGGG
SEQ ID NO: 226	CYP2D6_R296C_AS	Invader oligo	GAACCTGAGAGCAGCTTCAATGATGAGAACCTGA
SEQ ID NO: 227	CYP2D6_R296C_AS	Probe	ACGGACCGCGGAGCGCMTAGTGGTGGCTV
SEQ ID NO: 228	CYP2D6_R296C_AS	Probe	CGCGCCGAGGTCMTAGTGGTGGCTGV
SEQ ID NO: 229	CYP2D6_R296C_AS	Target	AGTCAAGCCACCACTAKGCGCAGGTTCTCATCATTTGAAGCTGCTCAGGGTTCCC
SEQ ID NO: 230	CYP2D6_R296C_AS	Target	AGTCAAGCCACCACTAKGCGCAGGTTCTCATCATTTGAAGCTGCTCAGGGTTCCC
SEQ ID NO: 231	CYP2D6_H94R_S	Invader oligo	CGGTCGGCSGTGCTCTCGCCGA
SEQ ID NO: 232	CYP2D6_H94R_S	Probe	ACGGACCGCGGAGTGGGTCAACCAKCGCV
SEQ ID NO: 233	CYP2D6_H94R_S	Probe	CGCGCCGAGGCGGGTCAACCAKCGCV
SEQ ID NO: 234	CYP2D6_H94R_S	Target	CGAGGCGMTGGTGACCCACCGCGGAGGACACSGCCGACCGCC
SEQ ID NO: 235	CYP2D6_H94R_S	Target	CGAGGCGMTGGTGACCCCGCGGCGGAGGACACSGCCGACCGCC
SEQ ID NO: 236			gcaagaaggaggtcaggg
SEQ ID NO: 237			aaggctttgcaggcttca
SEQ ID NO: 238			gaatccgggtgcgaagtg
SEQ ID NO: 239			ctgtggtaggtgacgagg
SEQ ID NO: 240			GCTCGGACTACGGTCAATCA
SEQ ID NO: 241			ggccccgcactgttc
SEQ ID NO: 242		FRET probe (FAM)	Y-tct-X-agg-cgg-ttt-tcc-ggc-iga-gac-ctc-ggc-gcg-hex
SEQ ID NO: 243		FRET probe (RED)	Y-tct-X-agg-cgg-ttt-tcc-ggc-iga-gac-tcc-gcg-lcc-gt-hex

Figure 12J

	SNPName	OligoType	SequenceOligo
SEQ ID NO: 244	CYP2D6*3	Invader oligo	CCCAGCTGGATGAGCTGCTAACTGAGCAT
SEQ ID NO: 245		Probe	ATGACGTGGCAGACCCAGGATGACCTGGGAV
SEQ ID NO: 246		Probe	CGGCCCGAGCGCGGATGACCTGGGAV
SEQ ID NO: 247		Target	CTGGGTCCCAGGTCATCCTGTGCTCAGTTAGCAGCTCATCCAGCTGGGTC
SEQ ID NO: 248		Target	GCTGGTCCCAGGTCATCCGTGCTCAGTTAGCAGCTCATCCAGCTGGGTC
SEQ ID NO: 249	CYP2D6*4	Invader oligo	CCGTTGGGGCGAAAGGGCGTCA
SEQ ID NO: 250		Probe	ACGACGCGGAGTTGGGGTGGGAGAV
SEQ ID NO: 251		Probe	ATGACGTGGCAGACCTGGGGTGGGAGV
SEQ ID NO: 252		Target	CGCATCTCCCACCCCAAGACGCCCTTTGCCCCCAACGGTC
SEQ ID NO: 253		Target	CGCATCTCCCACCCCAAGACGCCCTTTGCCCCCAACGGTC
SEQ ID NO: 254	alpha actin (used with 2D6*3)	Invader oligo	ccatccagggaagagtgccctgitt
SEQ ID NO: 255		Probe	acgaacgcggagaggaaacctgacat
SEQ ID NO: 256		Target	ttagaaatgacacaggggtctaacacaggccactctccctggatggg
SEQ ID NO: 257	alpha actin (used with 2D6*4)	Invader oligo	aggagtagccacgctcggtaggactcatt
SEQ ID NO: 258		Probe	CGCGCCGAGGcaggtagtcggtgagat
SEQ ID NO: 259		Target	cgcgatctcacgactacctgatgaagatctccaccgagcggtgctactcttc
SEQ ID NO: 260	CYP2D6*5	Invader oligo	5'-CCCCGCCACCCACACTGAGCC
SEQ ID NO: 261		Probe	5'-ACGGACGCGGAGTTACAGCACACAGGTGC
SEQ ID NO: 262		FRET probe (FAM)	Y-tct-X-agc-cgg-ttt-tcc-ggc-tga-gag-tct-gcc-acg-tca-t-hex

FIGURE 13

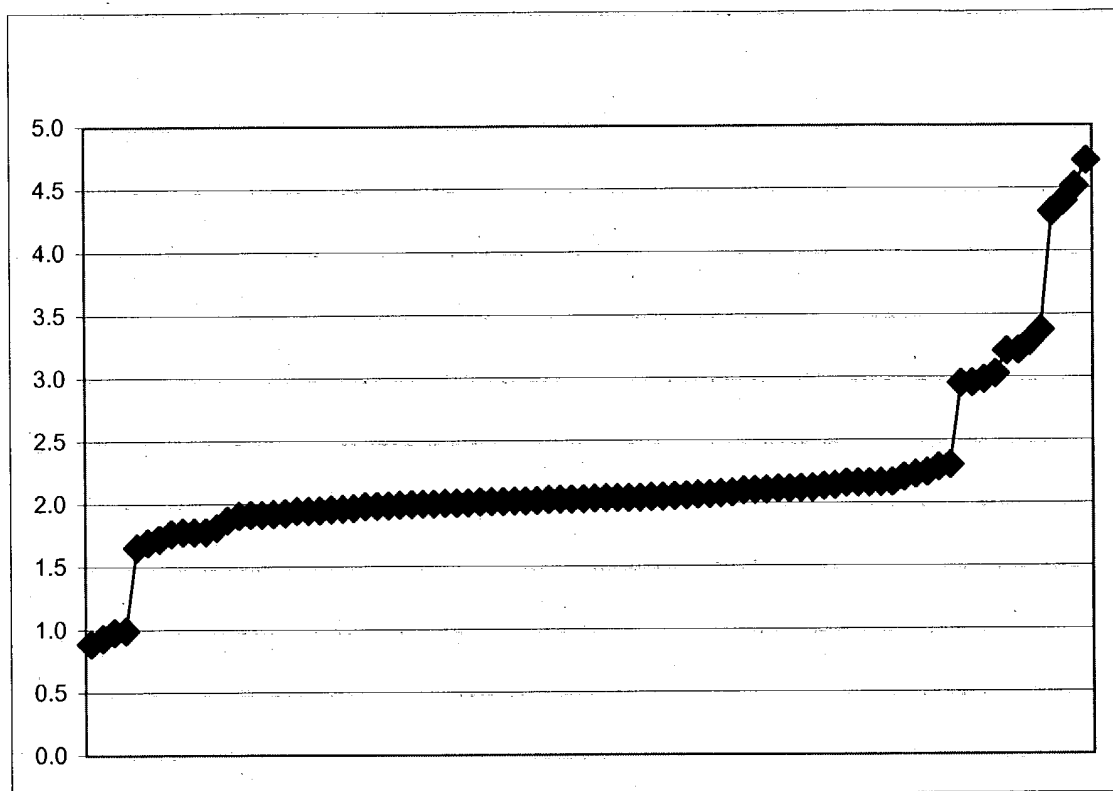


FIGURE 14

Primer Name	Sequence	Size	Oligo TM	Amplicon Size
primer pair 1	AAG GCT TTG CAG GCT TCA	18 bases	64.3	1460 bp
primer pair 1	GCT CGG ACT ACG GTC ATC A	19 bases	65.3	
primer pair 2	TGG AAT CCG GTG TCG AAG	18 bases	63.4	942 bp
primer pair 2	GAA ATC TCT GAC GTG GAT AG	20 bases	58.8	
primer pair 3	GTA CCT CCT ATC CAC GTC A	19 bases	61.7	866 bp
primer pair 3	CAC TCC TTC TTG CCT CCT A	19 bases	62.2	
primer pair 4	GCA AGA AGG AGT GTC AGG G	19 bases	64.1	1748 bp
primer pair 4	CTG TGG TGA GGT GAC GAG G	19 bases	66.1	

FIGURE 15

SNP Name	Nucleotide position/ change	Oligo Type	Dye	Poly- morphis m	Assay Oligo Sequence
CYP2D6 S486T	4180G>C	Invader	NONE		GCCACCATGGTGCTCTTGGCTTTCTGGTGAT
CYP2D6 S486T	4180G>C	Probe	FAM	C	CGCGCCGAGGCCCTTATCCCTTATGV
CYP2D6 S486T	4180G>C	Probe	RED	G	ACGGACGGGAGGCCCTATCCCTTATV
CYP2D6 S486T	4180G>C	Target	FAM	C	AGCTCATAGGGGGATGGGTACACAGGAAGCAAGACACCATGGTGGCTG
CYP2D6 S486T	4180G>C	Target	RED	G	AGCTCATAGGGGGATGGGTACACAGGAAGCAAGACACCATGGTGGCTG
CYP2D6 1846G>A	1846G>A	Invader	NONE		CCTTACCCGGCATCTCCACCCCCCAT
CYP2D6 1846G>A	1846G>A	Probe	FAM	A	CGCGCCGAGGAGACGCCCTTTGGV
CYP2D6 1846G>A	1846G>A	Probe	RED	G	ACGGACGGGAGGGACGCCCTTTTCV
CYP2D6 1846G>A	1846G>A	Target	FAM	A	GGGCGAAAGGGGGCTCTTGGGGTGGGAGATGCGGGTAAGGGG
CYP2D6 1846G>A	1846G>A	Target	RED	G	GGGCGAAAGGGGGCTCTTGGGGTGGGAGATGCGGGTAAGGGG
CYP2D6 H324P	2935A>C	Invader	NONE		GGGTACGGCTGCACATCCGGAC
CYP2D6 H324P	2935A>C	Probe	FAM	A	CGCGCCGAGGTGTAGGATCATGACGAGV
CYP2D6 H324P	2935A>C	Probe	RED	C	ACGGACGGGAGGGTAGGATCATGACGAGV
CYP2D6 H324P	2935A>C	Target	FAM	A	GCCTCCTGCTCATGATCCTACATCCGGATGTCAGCGTGAGCCCCAT
CYP2D6 H324P	2935A>C	Target	RED	C	GCCTCCTGCTCATGATCCTACATCCGGATGTCAGCGTGAGCCCCAT
CYP2D6 P34S	100C>T	Invader	NONE		GCAGTGGCAGGGGGCTGGGT
CYP2D6 P34S	100C>T	Probe	RED	C	ACGGACGGGAGGTAGCGTGCAGCV
CYP2D6 P34S	100C>T	Probe	FAM	T	CGCGCCGAGGAGTAGCGTGCAGCV
CYP2D6 P34S	100C>T	Target	RED	C	GCTGGCTGCACGTACCCACACAGGCCCTTCCACTGCCCC
CYP2D6 P34S	100C>T	Target	FAM	T	GCTGGCTGCACGTACTACACAGGCCCTTCCACTGCCCC
CYP2D6 883G>C	883G>C	Invader	NONE		AGGCCCTGACCCCTCCCTCTGCAT
CYP2D6 883G>C	883G>C	Probe	FAM	G	CGCGCCGAGGTTGCGGGCCCV
CYP2D6 883G>C	883G>C	Probe	RED	C	ACGGACGGGAGCTTCCGGCGCCV
CYP2D6 883G>C	883G>C	Target	FAM	G	AAGCGCGCCGCAACTGCAGAGGAGGGTCAAGGCCCTCT
CYP2D6 883G>C	883G>C	Target	RED	C	AAGCGCGCCGCAAGTGCAGAGGAGGGTCAAGGCCCTCT
CYP2D6 1661G>C	1661G>C	Invader	NONE		GCGAGCAGAGGCGCTTCTCCGTT
CYP2D6 1661G>C	1661G>C	Probe	FAM	G	CGCGCCGAGGTTCCACTTCCGCV
CYP2D6 1661G>C	1661G>C	Probe	RED	C	ACGGACGGGAGCTCCACTTCCGCV
CYP2D6 1661G>C	1661G>C	Target	FAM	G	AGTTGGCAAGGTGGACACGGAGAGGCCCTCTGCTCGCGC
CYP2D6 1661G>C	1661G>C	Target	RED	C	AGTTGGCAAGGTGGAGACGGAGAGGCCCTCTGCTCGCGC
CYP2D6 L421P	3887T>C	Invader	NONE		GCTTCAAAAGTGCCCTGGGCATCTC
CYP2D6 L421P	3887T>C	Probe	FAM	T	CGCGCCGAGGAGGAAGTGTTCGGGGV
CYP2D6 L421P	3887T>C	Probe	RED	C	ACGGACGGGAGGGGAAAGTGTTCGGGGV
CYP2D6 L421P	3887T>C	Target	FAM	T	TCCACCCCGAAACACTTCCCTGGATGCCAGGGGCCACTTTGTGAAGCCG
CYP2D6 L421P	3887T>C	Target	RED	C	TCCACCCCGAAACACTTCCCTGGATGCCAGGGGCCACTTTGTGAAGCCG
CYP2D6 T107I	1023C>T	Invader	NONE		CGCCCGCTGTGCCATCAA
CYP2D6 T107I	1023C>T	Probe	FAM	C	CGCGCCGAGGCCAGATCTCTGGGTTV
CYP2D6 T107I	1023C>T	Probe	RED	T	ACGGACGGGAGTCCAGATCTCTGGGTTTV
CYP2D6 T107I	1023C>T	Target	FAM	C	GCCRAAACCCAGATCTGGTGTATGGGACACGGCGGGGT
CYP2D6 T107I	1023C>T	Target	RED	T	GCCRAAACCCAGATCTGGTGTATGGGACACGGCGGGGT

FIGURE 15

SNP Name	Nucleotide position/ change	Oligo Type	Dye	Poly- morphis m	Assay Oligo Sequence
CYP2D6 1973[Gins]	1973[insG]	Invader	NONE		CAGGCTGCTGGACCTAGCTCAGAGGT
CYP2D6 1973[Gins]	1973[insG]	Probe	RED	INS	acggacggggaagatcgaaaggaggagt
CYP2D6 1973[Gins]	1973[insG]	Probe	FAM	DEL	CGCGCCGAGGACTGAAGGAGGATCGV
CYP2D6 1973[Gins]	1973[insG]	Target	RED	INS	CCCGACTCTCTCTCGATCCCTCTGAGCTAGGTCCAGCAGCCTGAGT
CYP2D6 1973[Gins]	1973[insG]	Target	FAM	DEL	AGCCCGACTCTCTCTCAGTCCCTCTGAGCTAGGTCCAGCAGCCTGAG
CYP2D6 3259[insGT]	3259[insGT]	Invader	NONE		GCCCTACACCACCTGCCGTGATTCATGAGGC
CYP2D6 3259[insGT]	3259[insGT]	Probe	FAM	INS	CGCGCCGAGGTGTGACGCGCTTTGV
CYP2D6 3259[insGT]	3259[insGT]	Probe	RED	DEL	ACGGACCGGAGTGCAGCGCTTTGGV
CYP2D6 3259[insGT]	3259[insGT]	Target	FAM	INS	TGTCGCCAAAGCGCTGCACACCTCATGAATCACGGCAGTGGTGTAGGGCAT
CYP2D6 3259[insGT]	3259[insGT]	Target	RED	DEL	TGTCCCAAGGCGTGCACCTCATGAATCACGGCAGTGGTGTAGGGCAT
CYP2D6 E410K	3853G>A	Invader	NONE		CATCRGTGCTGAAGGATGAGGCGCTCTGCT
CYP2D6 E410K	3853G>A	Probe	RED	G	ACGGACGCGGAGGAGAAAGCCCTTCGGV
CYP2D6 E410K	3853G>A	Probe	FAM	A	CGCGCCGAGGAAGAAGCCCTTCGGV
CYP2D6 E410K	3853G>A	Target	RED	G	GGAAGCGGAAGGGCTTCTCCAGACGGCCCTCATCCTTCAGCACYGATGAC
CYP2D6 E410K	3853G>A	Target	FAM	A	GGAAGCGGAAGGGCTTCTCCAGACGGCCCTCATCCTTCAGCACYGATGAC
CYP2D6 G42R	124G>A	Invader	NONE		GGCCCCCTGCCACTGCGCT
CYP2D6 G42R	124G>A	Probe	RED	G	ACGGACGCGGAGGGGCTGGGCAACV
CYP2D6 G42R	124G>A	Probe	FAM	A	CGCGCCGAGGAGGCTGGGCAACV
CYP2D6 G42R	124G>A	Target	RED	G	AGCAGGTTGCCAGCGCGGCGAGTGGCAGGGGCGCTG
CYP2D6 G42R	124G>A	Target	FAM	A	AGCAGGTTGCCAGCGCGGCGAGTGGCAGGGGCGCTG
CYP2D6 R201H	1943G>A	Invader	NONE		CGCGCTTCGAGTACGACGACCCCT
CYP2D6 R201H	1943G>A	Probe	FAM	G	CGCGCCGAGGCTTCTCAGGCTGV
CYP2D6 R201H	1943G>A	Probe	RED	A	ACGGACGCGGAGACTTCTCAGGCTGV
CYP2D6 R201H	1943G>A	Target	FAM	G	TCCAGCAGCCTGAGGAAGCGAGGTCGTCTGACTCGAAGCGGGCGCC
CYP2D6 R201H	1943G>A	Target	RED	A	TCCAGCAGCCTGAGGAAGTGAAGTGTGCTGCTACTCGAAGCGGGCGCC
CYP2D6 R440H	4042G>A	Invader	NONE		CCCTCCCTCCCCACAGGCGCT
CYP2D6 R440H	4042G>A	Probe	FAM	G	CGCGCCGAGGCGCGTGCATGCCV
CYP2D6 R440H	4042G>A	Probe	RED	A	ACGGACGCGGAGACCGTGCATGCCV
CYP2D6 R440H	4042G>A	Target	FAM	G	CCCGAGGCGATGCACGGGCGGCTGTGGGAGGGGAGGGG
CYP2D6 R440H	4042G>A	Target	RED	A	CCCGAGGCGATGCACGGTGGCTGTGGGAGGGGAGGGG
CYP2D6 V11M	31G>A	Invader	NONE		AGAAGCACTGGTGCCCTGGCCT
CYP2D6 V11M	31G>A	Probe	FAM	G	CGCGCCGAGGTGATAGTGGCCATCTTCV
CYP2D6 V11M	31G>A	Probe	RED	A	ACGGACGCGGAGATGATAGTGGCCATCTTCV
CYP2D6 V11M	31G>A	Target	FAM	G	GCAGGAAGATGGCCACTATACGGCCAGGGGACCAGTGTCTTAG
CYP2D6 V11M	31G>A	Target	RED	A	GCAGGAAGATGGCCACTATATGCGCCAGGGGACCAGTGTCTTAG
CYP2D6 V338M	3183G>A	Invader	NONE		GGCCGTGTCCAAACAGGAGATCGACGACT
CYP2D6 V338M	3183G>A	Probe	RED	G	ACGGACGCGGAGGTGATGGGCGAGTGV
CYP2D6 V338M	3183G>A	Probe	FAM	A	CGCGCCGAGGATGATAGGGCAGGTGCV
CYP2D6 V338M	3183G>A	Target	RED	G	CGCGGCACTGCCCTATACGTCGTCGATCTCCTGTGGACACGGCCTG
CYP2D6 V338M	3183G>A	Target	FAM	A	CGCGCACTGCCCTATATGTCGTCGATCTCCTGTGGACACGGCCTG

FIGURE 15

SNP Name	Nucleotide position/ change	Oligo Type	Dye	Poly- morphis m	Assay Oligo Sequence
CYP2D6 V7M	19G>A	Invader	NONE		TGGCCACTATCAYGGCCACGGGGAA
CYP2D6 V7M	19G>A	Probe	RED	G	ACGGACGCGGAGCCAGTCTTCTAGCCV
CYP2D6 V7M	19G>A	Probe	FAM	A	CGCGCCGAGGTCAGTCTTCTAGCCV
CYP2D6 V7M	19G>A	Target	RED	G	TATGGGGCTAGAGACACTGGTCCCTGGCCRTGATAGTGCCATC
CYP2D6 V7M	19G>A	Target	FAM	A	TATGGGGCTAGAGACACTGATGCCCTGGCCRTGATAGTGCCATC
CYP2D6 2549A>del		Invader	NONE		GCTGGGCTGGTCCAGGTCTCT
CYP2D6 2549A>del		Probe	RED	INS	ACGGACGCGGAGCTGTCTCAGTTAGCAGV
CYP2D6 2549A>del		Probe	FAM	DEL	CGCGCCGAGCGCTGCTCAGTTAGCAGV
CYP2D6 2549A>del		Target	RED	INS	ATGAGCTGCTAACTGAGCACAGGATGACCTGGGACCCAGCCAGCCCC
CYP2D6 2549A>del		Target	FAM	DEL	ATGAGCTGCTAACTGAGCACAGGATGACCTGGGACCCAGCCAGCCCC
CYP2D6 1707T>del		Invader	NONE		CAGCGGGCTCCTCGGTACCT
CYP2D6 1707T>del		Probe	FAM	INS	CGCGCCGAGGCACCTGCTCCAGCGAV
CYP2D6 1707T>del		Probe	RED	DEL	ACGGACGCGGAGCCCTGCTCCAGCGAV
CYP2D6 1707T>del		Target	FAM	INS	AGAGTCGCTGGAGCAGTGGTGACCCGAGGAGGCCCGCTGCC
CYP2D6 1707T>del		Target	RED	DEL	AGAGTCGCTGGAGCAGGGGTGACCCGAGGAGGCCCGCTGCC
CYP2D6 1039C>T V3	1039C>T	Invader	NONE		CTTGCCCTGGGAACCGGGCCCT
CYP2D6 1039C>T V3	1039C>T	Probe	FAM	C	CGCGCCGAGGAAACCCAGGATCTGGGV
CYP2D6 1039C>T V3	1039C>T	Probe	RED	T	ACGGACGCGGAGAAACCCAGGATCTGGGV
CYP2D6 1039C>T V3	1039C>T	Target	FAM	C	TCACCCAGATCTGGGTTTCGGGCCGCTGCCAAGGCAAGCA
CYP2D6 1039C>T V3	1039C>T	Target	RED	T	TCACCCAGATCTGGGTTTCGGGCCGCTGCCAAGGCAAGCA
CYP2D6 R296C V4	2850C>T	Invader	NONE		GGCAGAGAACAGGTGACCCACCATATGCT
CYP2D6 R296C V4	2850C>T	Probe	RED	C	ACGGACGCGGAGGAGGTCTCATCATTTGAAGV
CYP2D6 R296C V4	2850C>T	Probe	FAM	T	CGCGCCGAGGACAGGTCTCATCATTTGAAGV
CYP2D6 R296C V4	2850C>T	Target	RED	C	GCAGCTTCAATGATGAGAACCTGCGATAGTGGTGGCTGACCTGTTCTCTGCGGG
CYP2D6 R296C V4	2850C>T	Target	FAM	T	GCAGCTTCAATGATGAGAACCTGCGATAGTGGTGGCTGACCTGTTCTCTGCGGG
CYP2D6*8 G169X 1/3	1758G>T	Invader	NONE		TGTGCGCCCTTGGCCRACCACTCVC
CYP2D6*8 G169X 1/3	1758G>T	Probe	FAM	G	CGCGCCGAGGGGTGGTGATGGGCV
CYP2D6*8 G169X 1/3	1758G>T	Probe	RED	T	ACGGACGCGGAGTGGGTGATGGGCV
CYP2D6*8 G169X 1/3	1758G>T	Target	FAM	G	TTCTGCCCATCACCCACGAGTGGTYGGCGAAGGGCGGCACAAA
CYP2D6*8 G169X 1/3	1758G>T	Target	RED	T	TTCTGCCCATCACCCACGAGTGGTYGGCGAAGGGCGGCACAAA
CYP2D6*14 G169R 1/3	1758G>A	Invader	NONE		TGTGCGCCCTTGGCCRACCACTCyt
CYP2D6*14 G169R 1/3	1758G>A	Probe	FAM	G	CGCGCCGAGGGGTGGTGATGGGCV
CYP2D6*14 G169R 1/3	1758G>A	Probe	RED	A	ACGGACGCGGAGAGTGGGTGATGGGCV
CYP2D6*14 G169R 1/3	1758G>A	Target	FAM	G	TTCTGCCCATCACCCACGAGTGGTYGGCGAAGGGCGGCACAAA
CYP2D6*14 G169R 1/3	1758G>A	Target	RED	A	TTCTGCCCATCACCCACITGAGTGGTYGGCGAAGGGCGGCACAAA
CYP2D6 H94R AS	984A>G	Invader	NONE		TGCGCGAGGCGMTGGTGACCCCT
CYP2D6 H94R AS	984A>G	Probe	FAM	A	CGCGCCGAGGACGGCGAGACACv
CYP2D6 H94R AS	984A>G	Probe	RED	G	ACGGACGCGGAGGGCGGCGAGGACACv
CYP2D6 H94R AS	984A>G	Target	FAM	A	TCGGCSGTGCTCGCCGTTGGGTGACCCACGCGCTCGGCGACG
CYP2D6 H94R AS	984A>G	Target	RED	G	TCGGCSGTGCTCGCCGCGGGGTACCCACGCGCTCGGCGACG

FIGURE 15

SNP Name	Nucleotide position/ change	Oligo Type	Dye	Poly- morphis m	Assay Oligo Sequence
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Invader	NONE		GCTGGGTCCTCCAGGTCATCCGTGCTT
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Invader	NONE		GCTGGGTCCTCCAGGTCATCCGTGCTT
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Probe	FAM	DEL	cgccgcgggCAGCAGCTCATCCAG
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Probe	RED	INS	acggacgggagCAGTTAGCAGCTCATCC
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Target	FAM	DEL	ACCCAGCTGGATGAGCTGCTGAGCAGCAGGATGACCTGGGACCCAGGCC
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Target	FAM	DEL	ACCCAGCTGGATGAGCTGCTGAGCAGCAGGATGACCTGGGACCCAGGCC
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Target	RED	INS	ACCCAGCTGGATGAGCTGCTGAGCAGCAGGATGACCTGGGACCCAGGCC
CYP2D6 2539-2542[delAACT]	2539-2542[delAACT]	Target	RED	INS	ACCCAGCTGGATGAGCTGCTGAGCAGCAGGATGACCTGGGACCCAGGCC
CYP2D6 2613-2615delAGA	2613-2615delAGA	Invader	NONE		CCACCGTGGCAGCCACTCTCACCC
CYP2D6 2613-2615delAGA	2613-2615delAGA	Probe	FAM	INS	CGCGCCGAGGTTCTCCATCTCTGCCAV
CYP2D6 2613-2615delAGA	2613-2615delAGA	Probe	RED	DEL	ACGGACGGGAGTCCATCTCTGCCAGV
CYP2D6 2613-2615delAGA	2613-2615delAGA	Target	FAM	INS	GCCTTCTGGCAGAGATGGAGAGGTGAGAGTGGCTGCCACGGTGGGG
CYP2D6 2613-2615delAGA	2613-2615delAGA	Target	RED	DEL	GCCTTCTGGCAGAGATGGAGGTGAGAGTGGCTGCCACGGTGGGG
CYP2D6 172-174FRPrep(a) is	1863insTTTCGCC	Invader	NONE		CCCCARGACGCCCTTTGCGCCT
CYP2D6 172-174FRPrep(a) is	1863insTTTCGCC	Probe	FAM	INS	CGCGCCGAGGCTTTCGCCCTTTTCGV
CYP2D6 172-174FRPrep(a) is	1863insTTTCGCC	Probe	RED	DEL	ACGGACGGGAGCAACGGTCTCTTGGACV
CYP2D6 172-174FRPrep(a) is	1863insTTTCGCC	Target	FAM	INS	CTTTGTCCAAGAGACCGTTGGGGCGAAAGGGGGCGAAAGGGGGCTCTGG
CYP2D6 172-174FRPrep(a) is	1863insTTTCGCC	Target	RED	DEL	CTTTGTCCAAGAGACCGTTGGGGCGAAAGGGGGCTCTGGGGGT
CYP2D6 221C>A as		Invader	NONE		GGAGGGGGCAGAGGTSCTGAGGT
CYP2D6 221C>A as		Probe	RED	C	ACGGACGGGAGCTGGCCACCCAGAGCAV
CYP2D6 221C>A as		Probe	FAM	A	CGCGCGGAGATGCGCAGCAGAAV
CYP2D6 221C>A as		Target	RED	C	ATGTTTGTCTCTGGTGGGAGGCTCAGSAGCTCTGGCGGCTCCAG
CYP2D6 221C>A as		Target	FAM	A	ATGTTTGTCTCTGGTGGGAGGCTCAGSAGCTCTGGCGGCTCCAG
CYP2D6 221C>A s		Invader	NONE		CCACCATCCATGTTTCTCTCTGGTGGGSA
CYP2D6 221C>A s		Probe	FAM	C	CGCGCCGAGGCTCTCAGACCTCTGV
CYP2D6 221C>A s		Probe	RED	A	ACGGACGGGAGTCTCAGAGCTCTGV
CYP2D6 221C>A s		Target	FAM	C	GGCGGCAGAGGTCTGAGGCTSCCCYACCAAGCAACATGGATGGTGGTG
CYP2D6 221C>A s		Target	RED	A	GGCGGCAGAGGTCTGAGGATSCCCYACCAAGCAACATGGATGGTGGTG
CYP2D6 223C>G as		Invader	NONE		GGAGGGGGCAGAGGTSCTGAGGMIT
CYP2D6 223C>G as		Probe	RED	C	ACGGACGGGAGCCCTCAGCAAGCAAcV
CYP2D6 223C>G as		Probe	FAM	G	CGCGCGGAGGGCCCTCAGCAAGCAAGV
CYP2D6 223C>G as		Target	RED	C	ATGTTTGTCTCTGGTGGGAGCTCAGACCTCTGCCGCTCCAG
CYP2D6 223C>G as		Target	FAM	G	ATGTTTGTCTCTGGTGGGAGCTCAGACCTCTGCCGCTCCAG
CYP2D6 223C>G s		Invader (mutant)	NONE		CCACCATGTTTCTCTCTGGTGGGMIT
CYP2D6 223C>G s		Invader (wild-type)	NONE		ACCCACATCCATGTTTCTCTCTGGTGGGMIT
CYP2D6 223C>G s		Probe	RED	C	ACGGACGGGAGGAGCTCAGACCTCTGV
CYP2D6 223C>G s		Probe	FAM	G	CGCGCGGAGGCACTCAGACCTCTGV
CYP2D6 223C>G s		Target	RED	C	GGCGGCAGAGGTTCTGAGGCTSCCCYACCAAGCAACATGGATGGTGGTGA

FIGURE 15

SNP Name	Nucleotide position/ change	Oligo Type	Dye	Poly- morphis m	Assay Oligo Sequence
CYP2D6 223C>G s		Target	FAM	G	GGCGGCAGAGGTCTGAGGaTGCCCCACCAGAAACATGGATGGTGGGTGA
Copy Number Designs	Gene	Oligo			Sequence
E	2D6	2D6 Invader	CCCGCGCCACCACACTGAGCC		
E	Alpha Actin	Alpha Actin Invader	AGGAGTAGCCACCGCTCGGTGAGGATCTTCATT		
E	2D6	Probe Arm3 2D6	ACGGACCGGGAGTTACAGCACAGGTGC		
E	Alpha Actin	Probe Arm1 Alpha Actin	CGCGCCGAGGCGAGGTAGTCGGTGAGATC		
E	2D6	Synthetic Target Alpha Actin	GGACCGCACCTGTGCTGTAAgCTCAGTGTGGTGGCGCGGGGC		
E	Alpha Actin	Synthetic Target 2D6	CGGATCTCACCAGACTACCTGAATGAAGATCCTCACCAGCGTGGCTACTCCTTC		

FRET SEQUENCES

SEQ ID 242 (FRET probe FAM): Y-ict-X-agc-cgg-ttt-tcc-ggc-tga-gac-ctc-ggc-gcg-hex

SEQ ID 243 (FRET probe RED): Y-ict-X-agc-cgg-ttt-tcc-ggc-tga-gac-tcc-gcg-tcc-gt-hex

FIGURE 16A

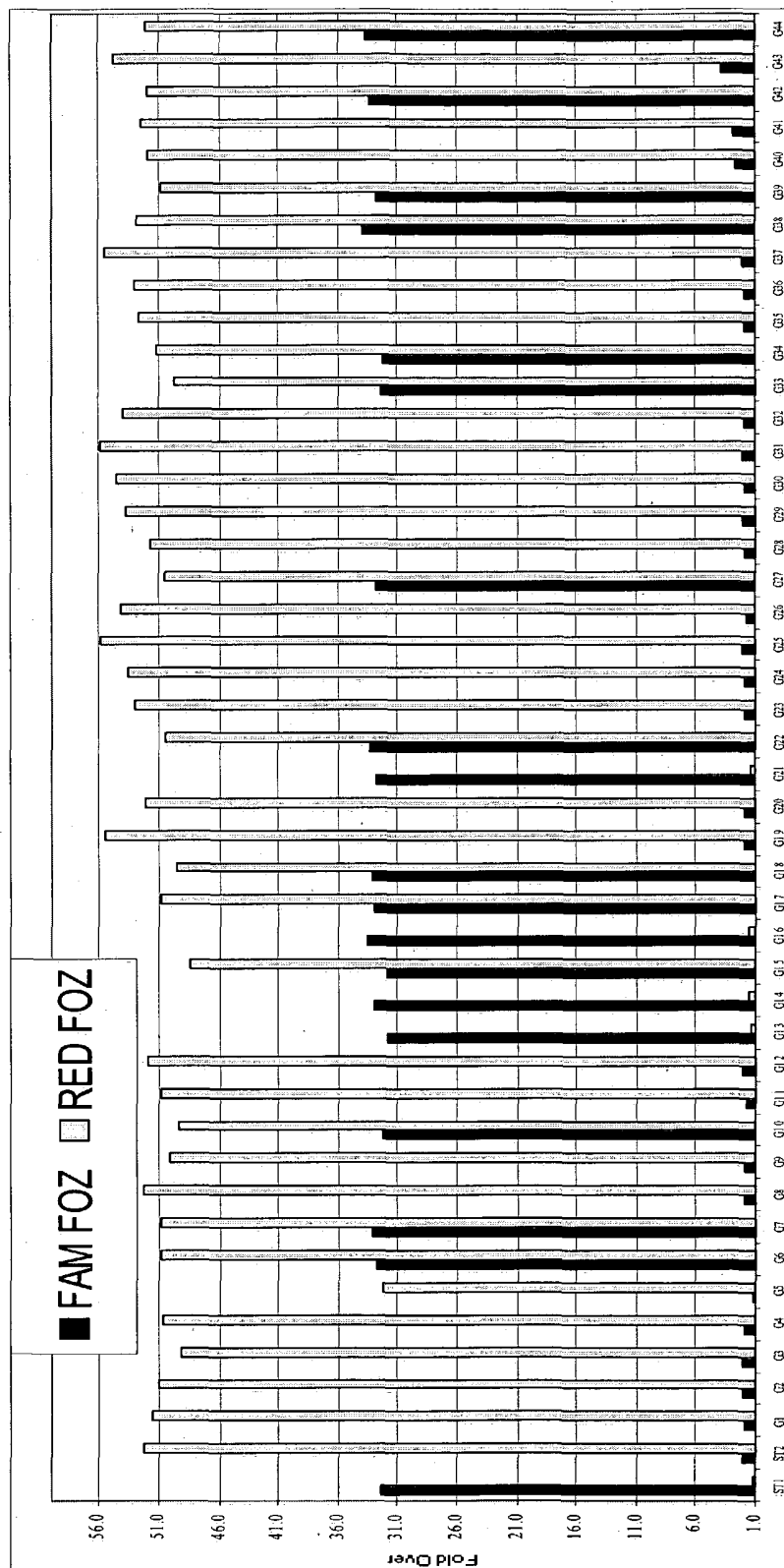


FIGURE 16B

SAMPLE NUMBER	ALLELE RATIO	GENOTYPE		
1	26	R		
2	24.74	R		
3	23.71	R		
4	26.26	R		
5	27.43	R		
6	1.55		H	
7	1.54		H	
8	25.89	R		
9	24.82	R		
10	1.53		H	
11	28.7	R		
12	24.53	R		
13	0.05			F
14	0.05			F
15	1.52		H	
16	0.05			F
17	1.54		H	
18	1.49		H	
19	27.55	R		
20	27.81	R		
21	0.04			F
22	1.52		H	
23	26.5	R		
24	26.41	R		
25	26.62	R		
26	29.62	R		
27	1.54		H	
28	27	R		
29	25.76	R		
30	26.9	R		
31	26.42	R		
32	28.02	R		
33	1.53		H	
34	1.59		H	
35	27.49	R		
36	26.16	R		
37	26.28	R		
38	1.56		H	
39	1.55		H	
40	19.14	R		
41	18.48	R		
42	1.56			
43	14.51	R		
44	1.54		H	

FIGURE 17

Allele	Signature SNP
*3	2549A>del
*4	1846G>A
*5	CYP2D6 deleted
*6	1707T>del
*7	2935A>C
*8	1758G>T

FIGURE 18

Allele	Secondary Signature SNPs
*2	18 SNPs
*10	4 SNPs
*17	2 SNPs

FIGURE 19

GENE_COPY_	R	G19A	G31A	C100	G124	G883	A884	C102	T170	G175	G184	INS18	G194	INS19	2539	A254	A264	A265	A266	A267	A268	A269	A270	A271	A272	A273	A274	A275	A276	A277	A278	A279	A280	A281	A282	A283	A284	A285	A286	A287	A288	A289	A290	A291	A292	A293	G318	G385	G404	G418	G430	COP_Y_NU_MBE	COP_Y_NU_MBE	COP_Y_NU_MBE	COP_Y_NU_MBE	R_10	R_41	GENOTYPE	Frequency	Genotype	Caucasian	Genotype																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
																																																															G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

FIGURE 19

[illegible]

FIGURE 19

[illegible]

FIGURE 19

[illegible]

FIGURE 19

4	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het	1	1	1	*1X3*4	0.002
4	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het	1	1	1	*1X3*4	0.002
4	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het				*1X3*42	<0.001
4	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het	1	0	0	*1X3*4J	0.002
4	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het	4	1	1	*1X3*4K	0.002
3	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*1X3*5	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het				*1X3*6	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*1X3*6	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*1X3*7	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	het	w	w	w	het				*1X3*8	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*1X3*9	<0.001
4	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*1X4*5	<0.001
2	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*10	0.010
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*11	<0.001
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*12	<0.001
2	w	w	het	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*14	<0.001
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*14	<0.001
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*17	0.002
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*19	<0.001
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*2	0.105
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w				*2*20	<0.001</

FIGURE 19

[illegible]

FIGURE 19

[illegible]

FIGURE 19

	2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w
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FIGURE 19

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FIGURE 19

2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4/*6	0.004
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	m					*4/*6	0.004
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	m					*4/*6	0.004
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4/*7	< 0.001
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4/*7	< 0.001
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	m					*4/*8	< 0.001
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	m					*4/*8	< 0.001
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	m					*4/*9	0.007
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4/*9	0.007
2	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	m						*42/*42	< 0.001	
2	w	w	m	w	w	het	w	w	w	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*10	0.006
2	w	w	het	w	het	w	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	het					*4J/*11	< 0.001	
2	w	w	het	w	het	w	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	het					*4J/*12	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*14	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*17	0.001	
2	w	w	het	w	het	w	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	het					*4J/*19	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*20	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*21	< 0.001	
2	het	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*28	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*29	0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*31	< 0.001	
2	w	het	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*35	< 0.001	
3	w	het	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het	1	1	2		*4J/*35X2	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*37	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*42	< 0.001	
2	w	w	m	w	w	m	w	w	m	w	w	m	w	w	w	w	w	w	w	w	w	w					*4J/*4J	0.043	
3	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	3	0			*4J/*4JX2	< 0.001	
2	w	w	m	w	w	m	w	w	m	w	w	m	w	w	w	w	w	w	w	w	w	het					*4J/*4K	0.043	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het	3	3	2		*4J/*4KX2	< 0.001	
3	w	w	m	w	w	het	w	w	m	w	w	m	w	w	w	w	w	w	w	w	w	het	3	3	2		*4J/*4X2	< 0.001	
3	w	w	m	w	w	het	w	w	m	w	w	m	w	w	w	w	w	w	w	w	w	het	3	3	2		*4J/*4X2	< 0.001	
1	w	w	m	w	w	m	w	w	m	w	w	m	w	w	w	w	w	w	w	w	w	w					*4J/*5	0.008	
2	w	w	het	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w					*4J/*6	0.004	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	w					*4J/*7	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4J/*8	< 0.001	
2	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	w					*4J/*9	0.007	
3	w	w	m	w	w	het	w	w	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*10	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*11	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*12	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*14	< 0.001	
3	w	w	m	w	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	het					*4JX2/*17	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*19	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*20	< 0.001	
3	w	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*21	< 0.001	
3	het	w	het	w	het	w	w	het	w	w	het	w	w	w	w	w	w	w	w	w	w	het					*4JX2/*28	< 0.001	

FIGURE 19

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FIGURE 20

